The Builder.

VOL. XLVII. No. 2181. SATURDAY, NOVEMBER 22, 1884.

ILLUSTRATIONS.

Reading Desk: Early Arabic 692
Bas-Relief and Lamp: Early Arabic 693
The Henry Wilson Memorial Church, St. Bartholomew's, Carbrook, Sheffield: Two Views (Plan, 690).—Mr. J. D. Webster, Architect... 696-701
Thurlow Towers, Streatham (Plans, 704).—Messrs. Batterbury & Huxley, Architects..... 705
Suggestion for the Decoration of the Dome of St. Paul's 689

CONTENTS.

Earthquake and English Architecture..... 683
Arab Art 684
Notes..... 684
The Town Builder—Modern Style 686
Damages or Injunctions in Actions for the Infringement of Rights to Light 686
The Internal Architectural Treatment of Cupolas: Royal Institute of British Architects 687
The Manor of Cullinges or Tongs, otherwise Thebaudes, Tibbolds, or Theobalds 688
The Decoration of St. Paul's 689
Reading-Desk, Ancient Arabic 690
Bas-Relief and Lamp, Ancient Arabic 690
The Henry Wilson Memorial Church: St. Bartholomew's, Carbrook, Sheffield 690
Thurlow Towers, Knollys-road, Streatham 690
Architectural Societies 690
The Landing of St. Augustine on Thanet 707
"New House," Pakenham, Suffolk..... 707
Sewage Disposal and Ensilage 708
Notes from Birmingham 708
London and Middlesex Archæological Society 709
Competitions 709
Bad Mortar: Demolition of Buildings..... 709
Case under the Metropolitan Building Act: What is a Public Building 709
The New National Liberal Club..... 709
Westminster Hall and Modern Architecture..... 709
Smell from Kitchener..... 710
Church Building News 710
The Student's Column: On the Construction of Roofs.—IV. 710
Lean-to Roofs..... 711
Recent Patents 712
Recent Sales of Property 712
Meetings 712
Miscellanea 712

Earthquake and English Architecture.

THE shock of earthquake felt in Yorkshire at 5h. 10m. p.m. on the 14th of November current was an alarm rather than a disaster. But it was an alarm, in the true sense of the word (that is, a call to arms), which it would be folly to neglect for fear of being called alarmists. Coming after the more serious shock felt some little time since in Essex, it is enough to show that we have no reason to place implicit reliance on that secular impunity from seismic action which we have so long happily experienced. Geology appears to indicate that the subterranean energy acts through great cycles of time, of the cause and the measure of which we are ignorant. And at all events it is indisputable that the geological strata of England which were deposited before the great upheaval of the North of England (the seventh of the great seismic elevations traced by D'Orbigny), have been in some places shattered by earthquake in a manner to which we know no parallel. When the line of the South Wales Railway, which runs through a district of great geological antiquity, was in course of construction, it became important to utilise the stone of the country for the construction of the railway bridges and stations. Between Carmarthen and Haverfordwest quarry after quarry was opened for this purpose, but opened only to be abandoned. Hard grit stones of the carboniferous series were met with, and on the first baring of the surface it appeared as if the quarrymen only encountered such schistose or laminated beds as often form the upper strata of sound rock, as, for instance, in the oolitic beds of the Cotswold range. But as depth increased, and the expense of quarrying augmented, the desired thick and sound beds failed to appear. Stone there was in abundance, hard and durable, but so shaken in its structure as to yield no blocks fit for the service of the builder. The expense thus caused was considerable; and it ultimately proved that it was only in the mountain limestone, or in those peculiar beds which in Pembrokeshire bear the name of calp, that stone fit for railway bridges could be expected with any certitude. The beautifully coloured sandstones of the trias, which had been used by Nash for the restoration of St. David's Cathedral, were brought, at great expense, from the vicinity of St. David's, for the sills and quoins of the station buildings at Haverfordwest. These beds, deposited after the period of upheaval to which we refer, were regular and unshaken; they worked freely, and yielded the most beautiful results when freshly wrought. But they had no durability. They began to decay, as they had done in the cathedral, almost as soon as the buildings were completed, and were only saved from crumbling away by being painted over with a liquid silicate. This, of course, is beside the question of earthquake; but it forms part of the experience collected that shows how violent was, at an early period, the seismic action in this part of England. Much the same experience was attained, about the same time, in Cornwall, where quarries of the most beautiful green and red serpentine, bought and wrought at high prices, were found to be so shaken throughout as only to afford materials for articles of very small size; the slabs and columns which were confidently expected being entirely unproducible from the quarries.

England, then, at a remote period of time, must have been, at least in some parts, as repeatedly and violently shaken by earthquakes as any part of the world of which we have the geological record. That a seismic period may be again setting in is, although we trust highly improbable, at all events not impossible. As to the effect of any such change on the houses of many of our vast centres of population, it is perhaps useless to inquire. But the case is different when we remember that there are from 40,000 to 50,000 houses now in course of construction in England and Wales, and that, taking the year round, we daily turn out upwards of 200 houses in every successive week. With regard to, at all events, some of them, the architect will do well to inquire, "How do they build in countries known to be subject to earthquake?"

The destructive force of earthquake is encountered by the architect in three different manners. In Italy, earthquakes are recurrent. They are nowhere unknown in that peninsula, and Calabria is the very cradle of the scourge. And it may be added, as illustrating the coincidence of the shock of the 14th with a high state of the barometer (which we found to read 30·78 in. at 200 ft. above sea level on the morning of the 15th), that in Italy it is said that earthquakes may be expected if the mercury of the barometer approaches the height of 31 in. The precautions of the Italian architect take the form of giving to his work a solidity to which we are unaccustomed in England. In Naples a house,—most of them are of very large size,—is built with the purpose of standing, without very material repairs, for 100 years. Within that time it is anticipated that it will be more or less damaged by earthquake. But the readiness with which the Italian mason, commanding as he does such admirable mortar and cement, fills up cracks and underpins settlements caused by earthquake, should be seen to be appreciated. The noble palaces of Naples and of Caserta, the work, if we do not err, of Van Vitelli, show seams and cracks that can readily be referred each to its special year of earthquake. We cannot, at the moment, state the thickness of the walls. But in the palace which, during the Spanish occupation, was reared for the viceroy of Naples, about the time that the straight course of the Toledo high street was run north and south through the whole length of the city, the walls, we can state from personal knowledge, in the basement story are as much as 17 ft. thick. It is true that the immunity that Naples enjoyed from damage by the earthquake of 1858, which killed 30,000 people in Calabria, in which occurred no fewer than twenty-seven shocks, and which raised the whole circuit of the Bay of Naples 8 in. in level, in one night, as indicated by the water-line of the Mediterranean, was ascribed, by the terror-struck inhabitants, to the special interference of St. Januarius and St. Orosius, whose statues are fixed on a bridge, with menacing gestures directed towards Vesuvius. But it may be conceded that the massive structure of the *palazzi* of Naples had something to do with the escape. We may well doubt whether many buildings in London would have survived such a shock as that.

In Japan, which is another earthquake-haunted region, the movement of the earth is neutralised in another fashion. The buildings of the Japanese architect may be compared to our domestic tables. They are framed substantially of wood, but, instead of being rooted in the ground as are the Italian palaces, they are supported on what may be called legs, or portions of converging framework on which the higher parts of the building rest. Thus, in some cases at least, it is conceivable that a building could actually be displaced by the exertion of adequate power without being overthrown. And thus, in point of fact, that mysterious and terrific earth wave, which no one who has not witnessed it can realise, passes underneath the buildings; which may shake, but which do not fall. Even lofty pagodas defy earthquake in Japan.

The third method is rather to encamp than to build. A military tent is tolerably secure against the earthquake. In Algeria, where towns have been observed from the mountains to crumble and disappear,—an experience which led the observer at first to doubt his command of his own senses,—the camps were uninjured. Nor is it only the bell-tent or the *tente d'abris* of the French soldier, or the black goat-skin

lean-to of the Arab, that thus escapes, like the reed in the fable when the oak was overthrown. Huts of cane, walled with mats of grass, form earthquake-proof, though by no means fireproof, cities.

If there be one class of men more than any other which has cause to dread the occurrence of earthquake in England it is the cheap and unprincipled builder. He would soon find his occupation gone when once it was noted how his houses stood, or rather, did not stand, the shocks. But are we quite right in leaving his punishment to the chance of the appearance of such a *deus ex machinâ?* We might take a leaf with advantage, in this respect, out of the Italian law. The liability of a builder in Italy does not cease with the completion of a house, or even with the payment for the work. We will not state the exact terms without referring to chapter and verse, but for a term of years,—five, we think, or seven,—the Italian builder is responsible for maintenance. Were this plan adopted here it might raise rents, but it would hardly raise the cost of housing a family. Such discoveries, for example, as that the house sewage was conducted through inadequate or ill-laid pipes, would lead to correction at the cost, not of the tenant, but of the builder. The danger, or the fear, of the advent of any of those great scourges in the presence of which man is comparatively helpless, is not to be lightly anticipated. But the policy of the ostrich is not safe, and the echo of the sound which was so alarming at Clitheroe the other evening should not be allowed to die away without the practical result of leading us to inquire—"How are we building the habitations of the people in our great centres of population?"

ARAB ART.

A MOVEMENT is on foot for encouraging the systematic study of Coptic or Saracenic domestic art in its home and birthplace. It is proposed to form a club of architects, artists, art-students, and others interested in the subject; to appeal to the art-loving public for funds, and with these to send qualified students, male and female, under proper protection and guidance, to Cairo, for the purpose of earnest study of this unique phase of art, for the faithful record of its still remaining, but fast perishing, examples, and for the acquisition and preservation of the movable portions of those Cairene houses whose destruction is either progressing or imminent. The remarkable success of the Egyptian Exploration Society, which is now in the third year of its existence, and, beginning with the enthusiasm of a lady (Miss Amelia B. Edwards) is now assuming larger and larger proportions, and doing more and more useful work, has suggested the formation of a similar association for the rescue and record of the later art of the same marvellous people.

Mr. Reginald Stuart Poole, in an address, on Saturday last, to the members of "the College of Working Men and Women," in Queen-square, Bloomsbury, and to a few invited friends, explained, with his wonted grace and facility, the genesis and *rationale* of this Saracenic art, tracing its history and development in both hemispheres, and its fusion with Western art in the countries which border the Mediterranean. His remarks received most valuable illustration and emphasis from a series of exquisite and quite faithful water-colour drawings of the most remarkable Cairene examples by Mr. Frank Dillon, the interiors being of special and remarkable beauty.

Mr. Poole visited Cairo whilst young enough to be admitted with his mother to the interiors of the various harems, and the impression which the extreme beauty of their architecture and decorations made upon his mind has never been effaced. These he dilated upon with an energy and an enthusiasm which he imparted to his hearers, and it is possible that he will be supported by a strong body of followers. An excellent reason for engaging lady students in the work is that they will be accorded entrance into apartments jealously guarded against the approach of man,—apartments which, moreover, receive the larger share of the decorator's attention.

With this new enterprise we are in entire sympathy, and should like to see the fragment of a Cairene house now at South Kensington form the nucleus of a collection in every sense representative of this beautiful art.

But the ladies and gentlemen who share Mr. Poole's desire to investigate and record the beauties of Eastern art will forgive us if we cannot go the lengths of their leader as to its universal applicability to English wants, or believe with him that it will quite satisfy the yearnings of those "seekers after truth" of whom he spoke. Some hard things were said about our houses,—their square box-like rooms, their ever-recurring right angles, their unadorned surfaces, their many constructive shams, and their multitudinous meannesses. Even the blank windows,—which we do *not* now build,—and other obsolete follies, were once more held up to ridicule, and "thrice he slew the slain."

The horizontal unrelieved ceiling under which we are nearly all compelled to live came in for a large share of vituperation, and its bad habit of occasionally falling down *en masse* having shown itself in the "College for Working Men and Women," itself lent point to his remarks, and brought them home to all his hearers. This is all very well; but when in turn Mr. Poole descanted upon the rectitude of the Cairene constructive scheme, he ventured upon dangerous ground and forgot, not being a practical architect, or overlooked, the fact that the beautiful honeycombed roofs of his loved Eastern halls are plaster shams, and neither better nor worse constructively than the detested Palladian "coffering" which provoked his ire. But worse remains behind. It must have struck his Christian hearers that, after all had been urged in praise of the Saracenic scheme of architecture and decoration, it left a great want unsatisfied,—that something was absent which the Western mind looks for instinctively and must find, if its aspirations are to be satisfied,—

> "So coldly sweet, so deadly fair,
> We start, for *soul* is wanting there."

Geometrical patterns, ever so artfully involved' and glass mosaics, put together ever so cunningly, carry no lesson to the human heart. They may suit the sensuous languor of the Asiatic, but we want a more robust style, and cannot afford to eliminate that priceless "human interest" which characterises all our native efforts.

The Eastern house was built on lines adapted to Eastern life, and the very completeness with which it fulfilled its object unfits it for Western use. We cannot live in enormous tile-lined halls, almost windowless, the light entering furtively through closed clearstory lattices; nor could the active Western mind find satisfaction in dreaming away "the leaden-footed hours" in the midst of the most splendid of divans, and surrounded with acres of meaningless ornament, however gorgeous and costly. A stray example in each important house,—a boudoir, a smoking-room,—we should be grateful for, but nothing more. Let the followers of Mr. Poole set themselves to preserve so much of the art of Cairo as may be in jeopardy, and by patient scrutiny wrest from its Saracenic authors the secret of their wonderful success with a few colours, and having gained this knowledge, let them brighten and beautify our homes to their hearts' content. They have our hearty good will, and shall have our unswerving support.

But no radical change in our native domestic art is wanted from them, and if they attempt such,—as the address hinted,—if they desire to substitute the peculiarities of the Eastern house in its plan, arrangement, and construction for the homes which have grown with our nation's growth and embody, however poorly, our native ideas of comfort, then we say that they are doomed to disappointment and that they imagine a vain thing.

NOTES.

THE award of the jury in the competition for the new Exchange Buildings Amsterdam, was sent in to the Burgomaster and Town Council on Saturday last, accepted by them, and the numbers and mottoes of the successful designs published in the Amsterdam evening papers of Monday, the 17th. They are as follow:—*Prizes of* 1,000 *Gulden* (83*l.*).—No. 3, "A. G. R."; No. 20, "La Bourse ou la Vie"; No. 38, "Ne(e)derland"; No. 69, the coat of arms of the town of Amsterdam, with the motto, "Je Maintiendrai"; No. 73, "Mercaturæ"; No. 83, "Perseverance"; No. 91, "Ammerack"; No. 106, "Lieven de Key"; No. 150, the coat of arms of the town of Amsterdam, with the motto, "In hoc Signo Floresco"; No. 172, "Y." Of these ten designs the authors of the following numbers were selected to take part in the final competition,—Nos. 20, 73, 91, 150, 172. Two hundred designs were sent in, nearly the whole of which were hung in the rooms of the New Museum. They occupied about 6,700 ft. run, and covered about 40,000 ft. superficial. The five designs selected for the final competition are all Dutch or Flemish in style, and consist of a mixture of brick and stone, in harmony with the surrounding buildings as regards material.

THE case of "Fleet *v.* The Metropolitan Asylums District Board," was decided on Wednesday last in favour of the defendants,—a conclusion which every unprejudiced person must have foreseen from the course of the evidence. The case was, as most of our readers are aware, that the defendants had established a small-pox convalescent camp in such proximity to his residence and house property at Darenth as to be a source of danger. Mr. Justice Pearson found no fault with Mr. Fleet for bringing the action, but found that the defendants had done nothing in which the law was bound to restrain them. It was not, the learned Judge thought, sufficient to prove that infection *might* be conveyed through the air, under the circumstances; it must be proved that it probably would be; and the evidence of the medical experts did not warrant that conclusion. We consider the verdict a right one. No care or precaution seems to have been spared in the construction and regulation of the camp hospital; and, though no one would be particularly anxious to have a camp hospital established a third of a mile from his residential property, it does appear to us that, considering that such hospitals must be somewhere, and their establishment under special circumstances is for the general good, there is a certain amount of selfishness and cowardice in the way in which one owner after another attempts to prove that *here*, at least, where *his* property lies, is not the place for a hospital. We have always believed, and acted on the belief, that those least liable to danger from infection are those who, without neglecting ordinary precautions, think least about it. The persons who are always in a state of scare on the subject remind one of those (spoken of in the Epistle to the Hebrews) "who through fear of death are all their life-time subject to bondage."

WE are informed that the post of Consulting Architect to the Education Department of the Privy Council has been offered to Mr. E. R. Robson, F.S.A., who has undertaken to accept it, as affording more time for private practice than that of Architect to the School Board for London. Of course Mr. Robson has to resign the latter appointment and to undertake to build no more elementary schools. Mr. Robson has carried out, during his connexion with the School Board, an amount of work which furnishes remarkable testimony both to his energy and power of grappling with arduous duties, and his perception for architectural fitness; he has covered London with school-buildings not, we confess, in a style altogether after our own hearts, but, nevertheless, looking eminently like schools, and characterised by sufficient variety, com-

bined with so much general unity of style as may serve to mark them as a class of buildings erected by one special body for one special purpose; and they are all well and solidly built, which is much to say in these days. It is to be hoped Mr. Robson's place will be adequately filled.

LORD BRABAZON, the energetic Chairman of the "Metropolitan Public Garden, Boulevard, and Playground Association," has recently made public two propositions on behalf of this Society, one for the use of the main drainage embankment from Victoria Park to Barking Creek as an East-end boulevard, the other for permission for cricket to be played on a space of 200 by 100 yards on the east side of Kensington Gardens, "between the trees skirting the Serpentine and the semicircular walk from the Magazine to Victoria Gate." Both applications have been refused by the authorities respectively appealed to. The Metropolitan Board of Works, who state that they had already received application from the *employés* at the Beckton Gas Works for permission to use the embankment as a road, do not give their reasons for their refusal. It would have been better if they had done so, as many people will certainly be inclined to think that there were no sufficiently good reasons to give. In refusing to sanction the cricket in Hyde Park, on the other hand, we hold that the Office of Works are perfectly right, and are acting, as Mr. Mitford says, "in the general interests of the public" in refusing the permission. A much more practical and reasonable appeal in relation to open spaces has been made by the Rev. S. A. Barnett in the *Times*, who points out the absurdity of keeping all the Board School playgrounds closed on the Saturday half-holidays, when the children most need a playground. He adds, "At an expense of 5s. a-week the ground around a Board school in this parish has been opened on Saturdays. The streets are clearer and the ground is full. Parents and children are alike pleased." Surely there can be no difficulty in carrying out so sensible an idea in the Board schools generally.

WE hope that the idea which has been talked about during the past week of making a large concert-hall in London to seat 3,000 or upwards, so as to reduce the cost to the hearers of high-class orchestral concerts, will not be rashly taken up. For all the highest purposes of the art, concert-halls beyond the size of,—say St. James's Hall, as a well-known example,—are a mistake. They mean coarse and forced execution and imperfect hearing. It may be better that people who cannot afford high prices should hear great works imperfectly than that they should not hear them at all. Let there be a large people's concert-room built if it is wanted, but not as supplying the deficiencies of St. James's Hall. It is perfectly true that we are most wofully in want of a better concert-room in London, but that is not because St. James's Hall is too small; it is just about the right size, and its acoustic properties are not bad, considering the monstrous initial mistake of building a music room with a semicircular roof, one of the last shapes which ought to have been chosen. We want a new concert-room, because St. James's Hall is the most ill-planned, awkward, and uncomfortable room, both in its seating, in its approaches, and in the malarrangement of its orchestra, that was ever tolerated in a distinctly musical capital, which London is. It is really wonderful how people have borne with it for so long; but whenever the enterprise and the capital are forthcoming for providing London with a really adequate concert-room, do not let the promoters fall into the error of making it larger. It might pay commercially, but it will be a fatal mistake artistically.

UNDER the heading "Our Future Watches and Clocks," attention is drawn in the last number of *Nature* to the probability of the extensive adoption for many purposes of the "more rational method" of counting the hours of the day continuously from midnight through twenty-four hours to the midnight following, instead of the present awkward division into two sets of twelve hours distinguished by "A.M." and "P.M." Our contemporary thinks that the adoption of this method for scientific time-reckonings is not unlikely to be followed, and ought to be followed by its general adoption at no very distant date, and considers the question of the best way of dividing clock and watch faces for the purpose. The division of the circumference into twenty-four hours would, of course, entail a reduction of one-half in the rate of travel of the hour-hand, and therefore could not be applied to any existing clocks or watches; but the addition of an inner circle of figures continuing the numbers up to twenty-four would enable the same movement to register the whole number of hours, the outer circle being read in the morning and the inner in the afternoon. Our contemporary seems to doubt if this would not be the best method for permanent adoption, having regard to the fact that most people read the clock rather by the position of the hand than by looking at the figures. We should be disposed to say that if the change is adopted of counting the whole twenty-four hours through, the hour-hand movement should be altered accordingly, as the logical result for permanent adoption, though of course this would render the change from one system to another more difficult for the moment. The dial should then be numbered "II., IV., VI.," &c., with a mark for the intermediate hours, so as not to overcrowd the figures, and the main stations of the dial would thus still coincide with the habitual division of the 60 minutes into groups of five for the reading of the minute-hand.

A QUESTION was asked on p. 642 as to District Surveyors' fees. Four houses were erected in the case in question; the District Surveyor surveyed them, and sent in his bill for about 10*l*., with a request for payment. The builder, who was primarily liable for the fees under his contract, was paid in full by his employers, but apparently forgot to pay the district surveyor. The builder became bankrupt, and the bill was sent to his employer direct. It is obviously hard that the building owner should have thus to pay twice over, but the district surveyor would, on his side, consider it a hardship not to be paid at all. None of this would have happened if the receipt for the fees had been shown when the last instalment was paid to the builder. Section 51 of the Building Act is very clear. It enacts that,—"The district surveyor shall be entitled to receive the amount of his fees due to him from the builder employed . . . . or from the owner or occupier of the dwelling," and means for the recovery of the fees by summary process are provided. District surveyors are so far happy that they are creditors by order of the law; but though occupying very satisfactory positions in the main, even they have at times their little difficulties. If they press for their money eagerly they are called greedy, and not very much liked; and if they are easy, good-natured critics think they well deserve to be forgotten by their grateful debtors.

THE preservation of wood has been the subject of constant experiment for the last eighteen years by Dr. Joseph Jones, of New Orleans, who has succeeded in developing a method of arresting decay for great periods of time, which, he believes, might extend to centuries. The process is simple enough, and consists in the saturation of wood with certain bituminous, resinous, and antiseptic substances. The sap and moisture of the wood are transformed into steam, and the albuminous constituents coagulated by heat, the wood thus treated being immediately plunged into a boiling solution of asphalte or bitumen and carbolic acid. The combination may be varied according to the age and density of the wood. As the preservative liquid and wood cool, the vapour is condensed, and the asphalte solution is driven into the pores and permeates the wood. The solvent of the asphalte rapidly evaporates from the surface of the wood after it is removed from the preservative fluid, leaving a smooth, polished surface, impervious to all moisture. Even such a heavy piece of work as a railway bridge may be treated in this fashion by keeping the individual parts in the solution for from two to twelve hours, and then coating each part with asphalte, so that the whole structure presents the appearance of having been carefully painted by hand with durable black varnish. Indeed, Dr. Jones claims for the process that the necessity for painting is done away with, and this would more than equal the expense of treating the wood. The wood may be subjected to the asphalte solution without preliminary heating. A drying-room for the wood, and a tank heated by steam for the preservative liquid, are the only forms of apparatus needed.

ONE of the best furniture woods in India is the Toon wood or Moulmein cedar (*Cedrela Toona*), being light, soft, red, and with no heartwood. As it is impervious to the attacks of white ants it is much valued by builders, especially for door panels and carvings. In Burmah, whence it is exported, it fetches 65 rupees per ton, the cost of cutting and delivery being about 44 rupees. In Bengal and Assam it is the wood principally used for making tea-boxes, but it has been in such demand of late years for this purpose that it is getting decidedly scarce, at all events as large trees, a great number of them having been used to make dug-out canoes. The Bhotias use the wood for shingles, wood-carving, and also for rice-pounders. If not interfered with, the Moulmein cedar grows to a very large size, with a girth of 20 ft. and a height of 80 ft. to 100 ft. of clear stem; and trees of this description may still be seen in forests which have been little worked, such as in the Chittagong Hills.

AT the Madison-square Theatre, New York, the orchestra is placed over the proscenium opening in an open loggia, which is treated in an effective manner architecturally. By this arrangement the space usually occupied by the orchestra is made available for the accommodation of the stall audience. Sketch-plans of the building are printed on the back of the programmes of all theatres in New York, by direction of the municipal authorities, showing the staircases and exit doorways. The value of these plans would be considerably enhanced if they were drawn to scale, which does not appear to be the case in the example before us, in which the size of the staircase and doorways is clearly exaggerated.

IN a recent lecture at the Exhibition of the "Union Centrale des Arts Décoratifs," M. Paul Sédille, whose name has been familiar to our readers from various lectures of his from which we have given extracts, gave a summary of the present architectural situation in France,—"l'architecture Française contemporaine,"—in which, sketching rapidly the history of French architecture for the last century, he dwelt on the great influence which had been exercised by the "École de Percier," and the "École romantique," both which occupied themselves too exclusively with the exterior treatment of architectural design, without taking into account the interior causes which led or should lead to the shaping of the exterior forms. After speaking of Viollet-le-Duc as the regenerator of Middle Age architecture, M. Sédille came to the actual French school of the day, of which the leading masters, omitting those now living, were Duban, Labrouste, Louis Duc, and Vaudoyer (we presume Le Sueur was regarded as representing a period previous to the "État actuel"). These, and others their pupils and followers, had, he thought, by a better directed and more complete study of antiquity, penetrated to something like permanent principles of an architecture which they would fain see "belle, mais vraie; élégante, mais utile; et portant toujours

dans ses manifestations un reflet de l'âme de l'artiste." This last is exactly what some of our own critics tell us it should not have. According to them, architecture was great in the Middle Ages, because it was impersonal. M. Sédille followed these remarks by a raid against the "collectionneurs," the amateurs who modelled their houses after Mediæval châteaux, and fitted them with appropriate furniture made on the pattern of the period. Here we do it at present with Queen Anne furniture. This kind of "vanity" has appeared in many periods and in many lands, and seems inherent in human nature,—of the modern world, at least. The worst of it is, that in all its forms it soon palls.

WE have received from the Fine Art Society a copy of a correspondence between them and the Secretary of the National Gallery, in regard to the concessions lately made to both French and German firms to remove pictures from the walls, and to remove the glass from glazed pictures, for the purpose of engraving or otherwise copying them, while the previous request of the Fine Art Society for similar concessions in order to facilitate the reproduction of pictures by photogravure had been denied. On the face of the case, as stated in the correspondence, it appears to us that both the Fine Art Society and their customers, the English public, have some right to complain. The publications of the Society have been of a very high order; and why the copying of pictures by French and German firms should be specially facilitated in the English National Gallery, to the exclusion of English firms, is a thing we cannot profess to understand, unless it is the result of some special wire-pulling.

THE *Pall Mall Gazette*, which is neither so judicious nor so well informed upon architectural subjects as upon some other matters of public interest, publishes in its last Wednesday's issue a kind of illustrated "puff," for it can be called nothing else, of the work done at the Tower under the instigation of the authorities of the Office of Works. The article appears to be an inspired one, and is as remarkable for its extravagant laudation of the Office of Works as for its simplicity in regard to architectural æsthetics. The extent of this simplicity may be imagined when we say that after speaking with enthusiasm of the "new tower and wall," the writer adds that there is still to be cleared away "another eighteenth-century warehouse *and the sham Gothic horse armoury*" (the italics are ours); in order to clear the view, be it observed, of the other specimens of sham Gothic which have been erected by the æsthetic beneficence of the Office of Works. The *Pall-Mall Gazette* adds that a new and better guide to the Tower is much wanted, and that Mr. Mitford is the person best able to produce it; and if it is not produced quickly the *P.M.G.* will produce one that will be still better. It is to be hoped this interesting competition will come off. Two rival guide-books to the Tower (of course entering into the philosophy of "sham Gothic") by Mr. Mitford and the scribe of the *P.M.G.* will at least be likely to afford amusement, if not instruction.

THE TOWN BUILDER—MODERN STYLE.

As you step from the dirt and squalor of the narrow street into his place of business, the wide folding doors closing noiselessly as you enter, you find yourself in a region of warmth, comfort, and comparative silence. The open lobby leads into a vestibule: the vestibule into a hall, spacious, clean, light, and gay with a most elaborate encaustic tile floor. Abutting on the long line of corridor to the right are seen a succession of small enclosures parted from it and from each other by glazed mahogany screens. The companion corridor gives access to the rooms of the principals. A gentleman-like young man steps out to receive you. He takes your card and regards it somewhat critically. Mr. —— is engaged just now on an important matter. You guessed as much from the handsomely-appointed brougham at the door, with its pair of sleek ponies and dapper coachman. He will not be long. Then you will wait. You are shown into an adjoining room. It has no outlook, the sashes being filled with ground glass. A series of old almanacks, varnished and framed, with faded chromolithographic pictures on them *àpropos* of nothing, adorn the walls. Not very interesting. A good fire is blazing in the grate: a roomy arm-chair invites repose; and the *Times*, cut and dried and neatly folded, is at your service. The musical clink of the masons' chisel is borne faintly from the adjoining yard, reviving the pleasant memories of your youth, and the low plaintive moan of the circular saws, broken by pauses in which they hiss and whirr like a groom at his work, comes muffled through the intervening doors. You yield yourself up to the seductions of these accumulated attractions, and have scarcely got well into a wrangle between a noble lord and a Cabinet Minister when the gentlemanlike young man summons you to the presence. You are not altogether pleased at the interruption. The fact is you are *not* very busy, and could, if left alone, spend half an hour very pleasantly. But if *you* are not busy *he* is, and despatches his callers with the celerity of the fashionable physician. He receives you with perfect address, and although you are a stranger to him you feel instantly quite at your ease. He is a pale handsome man of some five-and-thirty years, neat in his attire, with a cautious reserved manner; a clear, cold, grey eye, and a somewhat hard expression of face: altogether more like a banker than a builder. A confidential clerk occupies a seat at a neighbouring table, and notes down in shorthand the material points in the conversation. Documents are required, and he retires for them. The conversation is adroitly turned to the topics of the day. Politics are avoided. Mr. —— is not sure as to your bent. He has spent his holiday in the Engadine. Has returned by way of Rome, Milan, Florence, as the case may be, and has cleverly dodged the quarantine regulations of all Europe. He talks with considerable knowledge of art and architecture, and knows all the more prominent painters, sculptors, and architects. Or he has taken a run over to America to see the great Yellowstone Park before it is vulgarised out of all charm. Or again he has been loitering through the bazaars of Cairo in quest of treasures overlooked by previous explorers. The real business of your visit having at last commenced, you find him alive to all the points involved. Though comparatively young he astonishes you by the scope and variety of his experience and his acquaintance with technical matters. But his strong point is administration, and in finance he has few equals. It falls to him to see large undertakings "through" in all parts of the world, providing ofttimes the means in the widest sense of the word. A thousand men do his bidding with the precision and regularity of a vast machine. To him they look for their weekly wages and are never disappointed. They would as soon expect the sun to stand still in the Heavens as that the exchequer upon which they rely should fail. He is rarely seen by them or at the works which are carried out under his name. But his confidential agents are alert and ubiquitous. His Mr. Brown, Jones, Robinson, and the rest are models of diligence and ability. Were they otherwise they would have to seek employment otherwhere. He will undertake work of very modest importance,—replace a fallen slate or drive a railway through the unfrequented desert, and what he undertakes to do he will do well,—at his own price. His profits are proportioned to the risk, and both are sometimes very great. He takes, from the first, an independent position, and keeps it. When a certificate is due he notifies the fact, curtly demanding rather than asking for it. You will not receive from him the conventional fib about the shortness of cash and the large amount which must be made up by next Wednesday. He is the personification of system, and order is his first law. Your errand demands a visit to a neighbouring manufacturer, and he offers to accompany you. He has a round to go, and it will not be out of his way. As you pass into the cold and cheerless street you are surprised to see the brougham still in waiting. He opens the door and waives you in. So, then! it was not a client's after all! He asks your pardon while he peruses and dockets a file of papers placed ready for him. Your business brought to a close he leaves you with a graceful adieu, somewhat suddenly.

He has everything handsome about him,—a house in Cromwell-square and a "place" in Hampshire, whither he regularly repairs on a Friday evening,—Saturday is a broken day now and not worth coming to town for,—and so he spends it pleasantly in the country with a few friends. City men, Directors of Banks, &c., so that nothing is lost by making it a "holiday." A clerk brings down letters and receives instructions. His master owns some broad acres and half a village, where he has amused himself by building some model cottages. He subscribes liberally to the local charities without distinction of creed, and is himself a stanch Conservative and a sound Churchman. He affects the sportsman and hampers himself quite unnecessarily with the stiffest of gaiters and the heaviest of boots as a sort of protest against the enforced primness of his every-day costume. His partridges and pheasants are so useful in his business that they may almost be looked upon as members of his staff, and a well-preserved little trout stream, which runs through his grounds, has before now determined a difference which might else have filled the lawyers' pockets. On Monday morning you will see him at his office punctually at nine, and in an hour the brougham, with the matched and matchless bays, will be again in waiting at his door. He has invested 50,000*l.* in "the concern," and no one will grudge him the luxuries which such a fortune can in almost every walk of life command.

On learning that he is the junior member of the firm, a portentous image of the splendour of the head thereof rises in your mind. You are wrong. The senior partner is a very homely person, belonging,—as is said, apologetically,—to the old school. His clerks rarely see him, though he is known to be about, and they entertain for him an almost superstitious respect. His judgment is always taken in the last resort, and he is, in fact, the main spring of the business, although, like other main springs, concealed by more showy surroundings.

DAMAGES OR INJUNCTIONS IN ACTIONS FOR THE INFRINGEMENT OF RIGHTS TO LIGHT.

IT has been suggested by some who have given consideration to the subject of the law in regard to what are technically called ancient lights that in all cases where a right has been interfered with such interference should be compensated by the award of damages. It has been said that if the interference with a right to light is to be ground for an actica in a court of law it would be much better for the community at large that there should be what may be termed freedom of building, subject only to the award of damages for injuring the rights of a neighbouring building. There is a good deal to be said in favour of this view, but it is, perhaps, of more practical importance and use to discover, if possible, what is the judicial view which now exists of the power of a court to grant an injunction or damages. Since the passing of Lord Cairns's Act there has been an absolute discretion in the Court to grant one or other of these remedies. But every exercise of judicial discretion must be in accordance with some kind of rule, so that the interesting point is to discover by what rule the judges are guided in their judicial action. The rule is formulated in Roscoe's "Digest of the Law of Light" as follows:—"A mandatory injunction . . . . will only be granted if pecuniary damages will not fitly recompense the injured party." In stating with precision rules which can only be collected from a number of judicial decisions it is very easy to rather overrate a proposition, and, therefore, this rule is coloured by a subsequent note to the effect that its application much depends on the circumstances of each particular case. But, on the whole, a judicial decision on this point since the publication of the work in question seems to show that this is a quite accurate statement of the existing law. This decision also seems to show that the tendency of the judicial mind is in favour of awarding damages rather than injunctions. The case to which we refer is that of Holland *v.* Worley, "Law Reports," 26, Chancery Division, p. 578, which was decided this year by Mr. Justice Pearson. It is a noteworthy case because the judge examines several previous decisions with a view of extracting from them some definite rule to guide him in the matter. And this is the conclusion to which he comes after considering a judgment of the late Sir George Jessel: —"I do not think I shall

be misinterpreting the Master of the Rolls if I say that his opinion (in which I heartily concur) seems to me to be this, that if the defendant is doing an act which will render the plaintiff's property absolutely useless to him unless it is stopped,—in such a case, inasmuch as the rule of compensation which could be given to the plaintiff would be to compel the defendant to purchase his property out and out, the Court will not, in the exercise of the discretion given it by Lord Cairns's Act, compel the plaintiff to sell his property to the defendant. But in other cases, where the injury to the plaintiff would be less serious, where the Court considers that the property may still remain the plaintiff's, and be substantially useful to him as it was before, and the injury, therefore, is one of a nature that can (without taking away the plaintiff's property) be compensated by money, then the Court, if it thinks right, may exercise the discretion given to it by the Court." Now this exposition of the law seems to amount conversely to exactly the same thing as the rule quoted from the "Digest of the Law of Light,"—a rule which, as we have said, was not, as it seems to us, quite so certain two years ago as it is now.

There is another circumstance which makes this view, as we believe, a correct one. In 1877 Lord Justice (then Mr. Justice) Fry decided a case somewhat to the same effect, and the main reason why he awarded damages instead of an injunction was because the injury done to the plaintiff's building was done by an integral part of a very important building scheme. Coupling this fact with the other that though the plaintiff's building was injured, yet that the occupation of the house would not be seriously affected, the judge came to the conclusion that his proper course was to award damages to the amount of 200*l.*, and not grant an injunction. This was a decision of a judge who now sits in the Court of Appeal, and therefore we may accept his opinions, with those of Mr. Justice Pearson, and regard the view of the judicial mind as being now disposed to the giving of damages rather than to the ordering of a demolition of part of the building. It is not out of place either to point out the improvement in legal procedure in late years. So recently as 1865 a case in which, though the Court would not grant an injunction, it considered damages might be awarded, was sent down to a Common Law court for the purpose of the damages being assessed. Now no judge of the Chancery Division for a moment hesitates to assess the damages himself, and thus save the parties both delay and expense.

Returning for a moment to the main point, it is true that there are observations of the Court of Appeal in the recently-decided case of Newson *v.* Pender, which seem to show an approval of injunctions rather than of damages. For it was not certain in that case, which was one of an interim injunction, to what extent the plaintiffs would be injured, or whether they had been substantially injured at all, though there was a *primâ facie* ground for saying that they were. Moreover, the defendants offered to give an undertaking to pull down the offending building if it was proved at the final hearing of the case to substantially interfere with the rights of the plaintiff. But the Court of Appeal decided to continue the interim injunction ordered by Vice-Chancellor Bacon, and it did so partly because it could not "feel with confidence that upon the facts coming before the Court the result might not happen which has happened upon other occasions where the Court has felt the destruction of property to be very undesirable, and a view has been taken which the plaintiff has been unable to resist, that he should accept compensation in the form of damages instead of the pulling down of the premises." This expression of opinion seems to show a leaning towards the more violent method of redress, but it has also to be borne in mind that this was a question of continuing an injunction already ordered by a judge of the Court below, and next, that if the rule which we have extracted from the legal work already mentioned, and from recent judicial utterances, be properly applied, a plaintiff is never bound to be satisfied with damages unless they fairly compensate him for the injury done to his property.

Daylight Reflectors.—Mr. P. E. Chappuis, of Fleet-street, has just received a letter from the Lord Chamberlain appointing him Daylight Reflector Manufacturer to the Queen.

THE INTERNAL ARCHITECTURAL TREATMENT OF CUPOLAS.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE second ordinary meeting of the present session took place on Monday last, Mr. Ewan Christian, president, in the chair.

Mr. Hugh Stannus read a paper on "The Architectural Treatment of Cupolas in general, and that of St. Paul's in particular." He commenced by stating that he proposed to confine himself to Italian or Classic cupolas, and at the outset he would like to amend the title of his paper, and term it "The Internal Architectural Treatment of Cupolas." Referring to the several kinds of cupolas, many would term the square cupola a coved square room. Square unpenetrated cupolas were uncommon. Octagonal cupolas were numerous enough, the most celebrated being that of the Duomo of Florence. Twelve-sided cupolas were less common, and he only remembered that of Siena; while polygonal cupolas must remain unnoticed for the present. Circular cupolas were legion, notably those of St. Peter's and St. Paul's. Elliptical cupolas were sometimes to be met with. At Pisa the ellipse is over the crossing. Mr. Stannus exhibited a model of what he termed an "abcissate" cupola, good examples of which are to be found of the Byzantine period, such as St. Sophia at Constantinople, and St. Mark's at Venice.

The difference between these and penetrated cupolas was that the latter were cut by lines of vaults and the sides of openings, and were not necessarily in a vertical plane. Penetrated cupolas and vaults showed the soffit, which would be as deep as the amount of the oversailing. The number of good vaults which had been spoiled by the treatment of their soffits was very great. It had become a canon that the penetration should be at axial points, and figure decoration applied to the remaining parts of the cupola surface would be unaxial. Some cupolas pierced with circular windows were exceedingly beautiful. The bull's-eye seemed to lend itself to simple and easy treatment, and circular panels were equally good. When cupolas were penetrated the contour of the penetration should give the *motif* for the architectural treatment. There were three things to be considered in regard to treatment: first, the plan of the cupola; next, the existence or non-existence of any opening or eye at the centre; and, thirdly, the treatment of the remaining portion when the cupola was cut away. There were several courses of treatment suitable in reference to the subjacent architecture; there were cupolas which acknowledged the four axes of the subjacent parts, which was the broadest and best treatment; there were others which acknowledged every axis, as St. Peter's at Rome; while some cupolas ignored the subjacent parts altogether. The first typical treatment of cupolas which occurred to one, supposing they had a cupola supported by piers, was to arch from one pier to another. There was a further development where it was succeeded by arches, each springing on the crown of the tier below it. These were vaultings which had evidently been taken from the *motif* of the aqueducts.

Ribs had been very much used in cupola treatment. These were found in large cupolas, which would bear subdivision, and surmounted by lanterns, which seemed to demand some expression of rib-treatment to suggest a support for the lantern. It had been said that though ribs and panels were suitable for an octagonal dome, to cut up a hemispherical dome in that fashion would destroy its idea of mystery and infinity, and to parcel it out into measurable littlenesses. Both the experiments made by Mr. Poynter and himself were fragmentary in effect, and presented a more strongly marked ribbiness than a wider section would have shown. He was not strongly in favour of the rib treatment, but had used it because it was part of his commission. He referred to the Sistine chapel of St. Maria Maggiore, at Rome, as an example of ribbing in domes. Its great charm was the articulation between the cupola and the subjacent architecture. There were many examples of the rib treatment, and he might instance that of the British Museum Reading-room, designed by Mr. Smirke. Sub-panelling with circles between ribs was one of the commonest things in Italy; it was a pleasant way of treating the ground, and making a decorative effect. Another treatment was that of intersecting ribs, and stellar cofferings. This was an essentially Arabic treatment, the Arabs being fond of evolving wonderfully intricate geometrical patterns. The treatment of St. James's Hall by Owen Jones showed his study of Alhambresque work, the oblique ribbing of the ceiling being very beautiful. Applying that treatment to a circular plan they obtained a stellar cupola, like that at Cordova; but this treatment would be unsuitable for St. Paul's.

Mr. Stannus next referred to the treatment of perspective or scenic architecture, which had its greatest development when the art of perspective was first reduced to scientific rules. In more recent times the treatment of the Chapel at the Palace of the Legion d'Honneur was most extraordinary. This was really so much scene painting, and was unworthy of any monumental building.

Another treatment was that of coffering, and here they entered upon a large field. In the Church of San Bernardino at Verona the articulation was very beautiful, and it was one of the most charming examples of articulated coffering. There was another treatment which he termed "coffering with omitted articulation," and Sir Christopher Wren had used it in his beautiful church of St. Stephen, Walbrook. He only knew of one other case, and that was in a Roman church. Coffers of different widths were sometimes used, as were coffers between ribs, as at St. Maria della Salute, Venice, where the ribs were axial with the pilasters, and between these were square coffers. This being so thoroughly articulated, had a beautiful effect. There were hexagonal and octagonal coffers of various kinds, and he instanced Palladio's Rotunda at Vicenza, a circular hall between four square walls. Here Palladio recognised the axiality of the dome by making long and short coffers. The old Stock Exchange had a barrel vault coffered, and the cupola was also coffered. Mr. Cole's magnificent new dome there was a remarkable example of modern cupola treatment. Radial figures might be considered as an application of a frieze all round a cupola: they were much used in St. Mark's, and seemed to loom and brood over one, giving a solemn impression to the spectator. Another method of treatment was seen in the beautiful little mausoleum at Ravenna, where there was an "abcissate" cupola with a blue ground and gold stars. It had been suggested to use gold only, the beautiful effect of which might be seen in the charming Arab hall of Sir Frederick Leighton's *palazetto*. Marginal panelling was also a typical treatment, and examples of it were to be found in the Jesuits' Church at Venice and elsewhere. Zones were also used, as those who had seen the Baptistery at Florence would remember. There was a treatment associated with the name of Coreggio. Unfortunately the painter was then thought more of than the architect, and they all knew that those painters who had tried architecture had been conspicuous examples of "how not do do it." Michelangelo set a bad example in the Sistine Chapel. It was a grand thing to have the strength of a giant, but those who followed him set a fashion which had left some terrible results. In some instances limbs were allowed to project over the architecture, and there were churches where the artist had actually put a piece of wood, representing the wings, across the arches.

Good decoration required articulation with the existing architecture at St. Paul's; and if there were any features in the subjacent parts, they should be considered. Certain intercolumniations of the peristyle were blocked up, and any treatment should give a *raison d'être* for these. Then it should give scale to the cupola; it should be subdivided, and not override the architecture; it should provide space for appropriatie storiation; it should be original if possible, and treated in such a manner as to be *sui generis* and not a copy; it should emphasise the four axes of the cross; and further, it should suit the gradual unfolding as the worshipper walked up the nave. Articulation might be in actual relief, and hence he had endeavoured to make such a design as could be produced in plaster relief. Canvas plaster was so much cheaper than mosaic, that it would make a difference of about 7,000*l.* in the cost.

In applying anything they had learned from the types of treatment to St. Paul's, they would find the plan was circular, there was an eye, and the cupola was not broken, nor abscissate. The square heads to the windows made a very

abrupt stop, and these might have been treated with arches as at St. Peter's, though it would be undesirable. He had tried the scheme of arching over the piers, but found it would not do. There might be a narrow rib over each pilaster, or a broad rib over each buttress; but it would be better to have the broad rib, especially as it was more suited to cupola treatment than to a polygonal dome. Intersecting ribs or parallel ribs would not do; and then came scenic architecture, which degraded a noble cupola. Coffering was intended by Sir Christopher Wren: there was point and fitness in coffering the cupola, but the result would be rather a want of interest. If the coffering had been in existence, they would have hesitated in altering it, but as it was not in existence they could do something worthier. Coffering could be improved by articulation, but they might dismiss it as not sufficiently important. Then came axial panels and subjects, which might do fairly if well articulated. With respect to radial figures, the size of the cupola would make them unsuitable, unless they were of such gigantic dimensions as would dwarf the architecture. Marginal panels, again, were not necessary at St. Paul's, and zones were open to objection, as they dwarfed the apparent height of any cupola. Then there was the treatment, which he would term the plane-section, this being the characteristic treatment of a circular cupola. He claimed the merit of the plain section for the late Alfred Stevens, who adopted circles as the main features of his design. The circle, too, was the characteristic shape for visions and imaginings, and it was only when the painter had a square frame that he filled up the angles. Another advantage to the circle was that though other geometrical figures were distorted by being seen on concave surfaces, the circle made an ellipse only. The gold ground permeating everything he held to be essential. [This statement evoked much applause.] One then felt that the whole surface was going round, without a break in its continuity. Clearness at the base of the cupola was necessary, but if it lost colour and became more golden as it went up, it would preserve the mystery that now existed. But there was a difference between disappearing in the dirty dinginess of Thornhill and melting into the golden light described in Dante's vision. Another matter was the question of scales: whenever Thornhill's work was seen it dwarfed everything, but Stevens increased the apparent size by multiplying, and adding dignity to the fabric. Three years ago he (Mr. Stannus) conceived that the ribs might be omitted, and he submitted a version showing this to the Sub-Committee, who said they had no power to consider it. Mr. Stannus concluded a long paper by some remarks on the storiation of the dome; and by expressing his indebtedness to the Dean and Chapter, Mr. Penrose, Mr. J. O. Scott, and others.

Mr. H. H. Statham proposed a vote of thanks to Mr. Stannus for his interesting lecture and the valuable examples of dome-treatment he had shown, bringing before the meeting really a compendium of the subject. There were two main issues suggested in regard to the decoration of the dome of St. Paul's; the first was, the question upon which Mr. Stannus had dwelt so much, viz., the relation of the decoration to the architecture; the second being the consideration of what in the shape of design should be put there when the first principle was decided upon. The great point brought forward and emphasised by Mr. Stannus was what he very happily termed the articulation of the design with the subjacent architecture. Mr. Stannus's idea,—and on the face of it there was a good deal to be said for it,—was that as the peristyle was divided into so many sections by the solid piers at intervals, the decoration of the dome should carry out the idea and appear to have a special reference to it. In the first place, had they any information as to what Wren's wishes would have been upon this subject? So far as they had them, they went to show that Wren would have discarded that division of the peristyle. He had gone to refresh his memory with a sight of the model of the original design, which showed the dome coffered symmetrically, with no special reference to any division of the peristyle, beyond the ribs of the coffering going over each pilaster. Then there was a floating rumour, the truth of which he had not been able to ascertain,—that the dome was coffered before Thornhill painted it. His attention was drawn to that by Mr. Stannus at a meeting of the St. Paul's Ecclesiological Society, when he was told that this had been stated in the *Builder*. The statement was, however, only made in a letter printed in that journal, referring to an engraving by Emmett. He had inquired for it at the print-room of the British Museum, where they thought they had seen such an engraving, but could not find it. It was not improbable the dome might have been coffered before Thornhill painted it, and the state of the original model left it probable that Wren contemplated coffering. So that this almost put Wren on one side in regard to the articulating of the dome with the solid pilasters. As to the coffering they might dismiss that from their minds, as on the whole a commonplace and prosaic treatment of a great dome. Then they came to the question whether they should strongly articulate the lines marked by the solid pilasters, by continuing them as ribs. He was inclined to think that to accentuate the ribs strongly was to deteriorate the essential grandeur of the dome. It formed an expanse which had a mystery about it, and to divide it vertically by strong lines was reducing it to so many measurable parts. Letting it then be granted that the dome should not be divided by these strong vertical lines, they came to the second question, what species of decoration should find place there. He (Mr. Statham) had taken great interest in this matter, partly because he had seen Mr. Poynter's great picture in several stages, and thought it one of the finest and most expressive modern works he had seen, but in its present position all its expression was lost. The conclusion this led him to was that it was a mistake to put, in such a position as that, pictures the point of which depended upon expression and differentiation of countenance. And this brought him to the idea with which he wished to close his remarks,—the suggestion that there was one idea in the decoration of domes, which had not been fairly carried out. What he would suggest might be called the Coreggio idea reduced to decorative form, not putting up a series of pictures which could not be examined because of the distance, and the danger of dislocating one's neck, but something which was a grand and simple idea, easily grasped, and not depending upon play of countenance. This sort of treatment should have a meaning which could be easily grasped, and which would be a magnificent culmination for whatever decoration might be applied to the lower parts. Browning's old Renaissance bishop, who "ordered his tomb in St. Praxed's Church," pleased himself with thinking how from his tomb he would

> "Look up into the airy dome, where dwell
> The angels, and a sunbeam's sure to lurk."

He did not want any series of pictures, but just the one idea of angelic glory carried out over the dome, without divisions, and ribs, and lines destroying its grand unity,—a treatment giving a pervading glory to the whole surface, without in any way disturbing or lessening the proper architectural effect of the dome.

Mr. J. P. Seddon seconded the vote of thanks, and agreed in most points with Mr. Statham. The dome of St. Paul's was left by its architect one vast, unbroken, and sublime vault, and its only decoration should be by the subsidiary art of painting or mosaic. Whatever emphasis might be desirable, and some little was desirable, should be supplied by the painter's craft alone. The dome, spreading above the altar with a baldachino, placed in the centre of the crux, should symbolise heaven, and be painted as such. The dome was quite out of sight of the nave, and could only be seen from underneath, and its decoration should be carried out in proper decorative art. Thornhill's interesting paintings disturbed little of the serenity of the dome's surface, and their translation into colour would deprive them of their principal claim to existence. There was in the National Gallery a design by Botticelli, which gave all that was desirable for the decoration of the dome; but the number of saintly figures would require to be fewer, so that each should stand out distinctly.

Mr. Edward Armitage, R.A., deprecated the architectural division to be seen in Stevens's design. Where there were figures there was this difficulty, that they must be made of different sizes to fill up, with large figures for the large panels and small figures for the small panels, otherwise the latter would be overcrowded. The different sized figures gave an impression from below of the section of an exhibition gallery, with a lot of pictures all placed higgeldy-piggeldy on the wall, and some of the smaller ones "skied" at the top. Therefore whatever was done he would always deprecate the ribs on that account. His suggestion, he believed, would form a much grander treatment for the dome, and it might be united with Mr. Burges's design, without having Archaic, or Romanesque, or Byzantine figures. A friend of his had made a small design which he understood would appear in this week's *Builder*,* for which he (Mr. Armitage) had sketched some figures, and he believed it would be very much better than the principle of having eight sections. To his mind there was an insuperable difficulty in painting elaborate figure subjects, such as in the designs they had seen. The dome was extremely dark, and only in bright summer weather could anything up there be seen; therefore whatever was done should be of the very simplest kind, laid in with flat tints, and no modelling. The eye would follow much better if the tint was perfectly flat, and that was the kind of decoration most suitable for the dome. If other portions of the church were decorated appropriately, they would then feel what was really required for the dome. They would feel that they did not want great, solid Michelangelesque figures, but small groups, or even single figures, with flat tints and grand outlines. The outlines would be seen, while the modelling of the figures would be quite lost.

Mr. J. D. Crace said that the reason why so many domes had been treated in mosaic and with ribs, was that it was the only way in which the vertical section could be explained. The earliest known dome,—that at Ravenna,—was divided by ribs, with the unbroken surface filled by mosaic. He heartily endorsed what Mr. Armitage had said with regard to the figure treatment, which should be of extreme simplicity of form. At the same time, the rib treatment had not had a complete trial. If they took St. Peter's or other domes, and divided them by ribs, they would invariably find that the main vertical line was undisturbed by being interlaced with anything. Wherever Mr. Stannus's circles touched the ribs there was a pinched-in form.

Mr. W. White, F.S.A., felt strongly that the articulation of the vertical lines of the dome was of the greatest consequence. At the same time, they should not be treated in too strong a manner, and zonal treatment ought not to be altogether disregarded. Near to the eye a plane surface is minified, and by painting in chiaro-oscuro it is enlarged; the contrary being the effect at a distance. In any case a distinct picture in the simplest flat surface painting would be much larger in effect than one painted up to the highest pitch.

On the motion of Mr. G. Aitchison, A.R.A., seconded by Mr. Woodthorpe, the discussion was adjourned, a vote of thanks being passed to Mr. Stannus.

THE MANOR OF CULLINGES OR TONGS, OTHERWISE THEBAUDES, TIBBOLDS, OR THEOBALDS.†

In the year A.D. 1441, the Manor of Thebaudes being then vested in the Crown, was granted by Henry VI. to John Carpenter, Master of St. Anthony's Hospital in London; John Somerset, Chancellor of the Exchequer; and John Carpenter, jun., to be held of the Crown by the annual rendering of a bow, value 2s., and a barbed arrow, value 3d.

The next account we have of this manor is in the eleventh year of King Henry VIII., when it was conveyed by Cecilia Bedyl, widow, with its appurtenances in Cheshunt and Waltham Cross, to the use of such persons as she should by her will appoint, and afterwards, in the same year she settled it upon Thomas Burbage (described as her son) upon his marriage with Agnes, daughter of James Monkaster, merchant tailor, of London, from whom it descended to their son Robert, who, on the 3rd of April, *anno* 3 Elizabeth, conveyed it to John Ellyott, of London, mercer; and he on the 10th of June, *anno* 5 Elizabeth, in conjunction with Eleanor his wife, sold it to the Right Honourable Sir William Cecil.

This Sir William Cecil was the son of Richard Cecil, esq., Principal Officer of the Robes to

---

* See p. 689.

† A paper read by Mr. F. D. Rees Copestick, at the last annual meeting of the Incorporated Church Building Society, at Cheshunt Great House.

King Henry III., and his advancement in life is said to have resulted from the following circumstance:—

"Coming to court to see his father, he there met with two chaplains of O'Neil, the famous Irish chief, with whom he entered into a warm discussion in Latin, and acquitted himself with such dexterity and address as highly exasperated his opponents. The king, hearing of this circumstance, sent for young Cecil, and was pleased so with his address and conversation that he appointed him 'Custos-Brevium' of the Court of Common Pleas. In 1541 he married his first wife Mary, daughter of Sir John Cheeke, who shortly after died; and in 1545 he married his second wife, Mildred, daughter of Sir Anthony Cooke, of Geddy Hall, Essex, and received from the Duke of Somerset the appointment of Master of Requests; and in that year he accompanied the duke into Scotland, was present, and nearly killed by a cannon shot, on the battlefield of Musselborough. Upon his return to court he was appointed to the post of Secretary of State by Edward VI. On the 12th October, 1549, he, with other adherents of the Duke of Somerset, was arrested and committed to the Tower, but was in a short time liberated. Upon the accession of Queen Elizabeth he was re-appointed Secretary of State, and sworn of her Privy Council, and shortly after he built a seat upon his manor and estate of Theobalds, which, says he in a letter dated the 5th of August, 1585, 'was begun by me with a mean measure, but increased on occasion of her Majesty's often comying'" (*sic*).

The following description of Theobalds is taken from Lysons's "Environs of London," p. 33:—

"It consisted [*temp.* James I.] of two principal quadrangles, besides the Dial-court, the Buttery-court, and the Dovehouse-court, in which the offices were situated. The Fountain-court,—so called from a fountain of black and white marble in the centre,—was a quadrangle of 86 feet square, on the east side of which was a cloister, 8 ft. wide, with seven arches. On the ground-floor of this quadrangle was a spacious hall, paved with Purbeck marble; the roof arched over the top with carved timber of curious workmanship. On the same floor were chambers for the Lords Holland and Hamilton, and the king's waiters. On the second floor was the Presence-chamber, wainscoated with good oak, and richly gilded with antique pictures over the same; the ceiling full of gilded pendants hanging down, setting forth the room with great splendour; also with very large windows, and several coats of arms set in the same. These windows opened south on the walk in the large garden leading to the green gates going into the park, where was an avenue a mile long, between a double row of trees. On the same floor were also the privy chamber, the withdrawing chamber, the king's bedchamber, and a gallery, 123 ft. by 21 ft., wainscoated, with oak and paintings over the same of divers cities [*sic*], *rarely painted*, and set forth with a fret ceiling, with divers pendants, roses, fleurs-de-lis, painted and gilded with gold, also divers large '*stagges' heades sett*' round the same. The windows of this gallery looked north into the park, and so to Cheshunt. On the upper floor were the Lord Chamberlain's lodgings, and other apartments. Near the Chamberlain's lodgings, on the east side, was a leaded walk, 62 ft., by 11 ft. wide, with an arch of freestone over it. On the west of the Lord Chamberlain's lodgings was another walk of the same dimensions looking westward into the *Fountain-court*. At each corner of these walks stood four high large towers, covered with blue slate, with a lion and vaines on the top of each, and in the walk over the Hall one faire and large *turret* in the fashion of a *lanthorne*, wherin hung twelve bells for chiming and a clock with chimes of sundrie work. The walk from the lower gate to the middle of Fountain-court was arranged so that the figures of Cupid and Venus might easily be seen from the highway when the gates were open. The middle court was a quadrangle of 110 ft. square,—on the south of which were the queen's chapel (stained glass windows), her presence, bed, and coffee-chambers. The prince's lodgings were on the north side; on the east side a cloister, over which was the green gallery 109 ft. by 12 ft., well painted round with the several counties of England. On the west of the quadrangle was another cloister on five arches, over which were the duke's lodgings, and over them the queen's gallery, 109 ft. by 14 ft. On the south side stood 'a large open cloister, built upon pillars of stone, arched over with seven arches well painted with the kings and queens of England, and paintings of many castles and battles and divers descriptions on the walls.'"

Queen Elizabeth visited "Theobalds" in 1566, 1571, 1572, 1578, 1583, 1587, 1591, 1593, 1598, and in the latter year held court here after the death of the great Lord Burghley, who was succeeded in the manor of Theobalds by his second son, Sir Robert Cecil, who soon after the death of Elizabeth had the honour of entertaining King James here on his way from Scotland. In the year 1606 he entertained James I. and Frederick III., king of Denmark. The king, having become enamoured of the place, prevailed upon his minister to exchange it with him for his Palace of Hatfield, which was accordingly done by deed dated the 14th of May, anno 5 James I.

King Charles I. resided occasionally at this palace, and it remained in the possession of the Crown until the thirteenth year of the reign of Charles II.,* when it was granted by letters patent to George Monk, Duke of Albermarle, upon whose death it became vested in his only son Christopher, and by divers conveyances afterwards became vested in Ralph, Duke of Montague, who married the Duke of Albermarle's widow, who sold the estate in 1736 to Letitia Thornhill, and which upon the trusts of the will of her father, Sir Robt. Thornhill, and in consequence of the deaths of his children without issue, descended to Sarah, wife of Richard Cromwell, esq., one of the sons of Major Henry Cromwell, and to Eleanor Hinde, her sister, who were the daughters and coheiresses of Eleanor Gatten, the wife of Ebenezer Gatten, esq., the surviving sister of the above Sir Robert Thornhill, from which Sarah Cromwell, her moiety, and that of Mrs. Hinde's under the limitations of her will, it descended finally to Sarah Cromwell's three daughters, Elizabeth, Anne, and Letitia, who by their wills devised it to Oliver Cromwell, esq., their cousin, the last male descendant of the Cromwell line, who, in the year 1795, built a mansion in Brantyngshay, otherwise Cheshunt Park, which property had descended in the same manner as the manor of Theobalds, and which, after his death, became the property of the Earl of Portland, whose son was by George I., created Duke of that name. About the middle of the last century the property was sold to a member of the Prescott family, under whose direction the remains of the old palace were pulled down, and a new house, said to be somewhat similar to St. James's Palace, was erected. A considerable addition and improvement was made to it by the late Sir Henry Meux, who held it for several years, under Sir George Prescott.†

The property now called Theobald's Park was bought by Sir Henry Meux in 1882.

Sir Thos. Abney had a house here; and here Dr. Watts lived for some time before his removal to Stoke Newington.

Lord William Lennox wrote the following *jeu d'esprit* on the name of Meux, some of the family pronouncing their name as if spelt Mews:—

"There's Meux entire, called Mews the swells among,
Though *mieux* is *better* in a foreign tongue;
Tant mieux, why change the sounds? 'Tis no myth,
Tayleur was Taylor once, and Smythe was Smith."

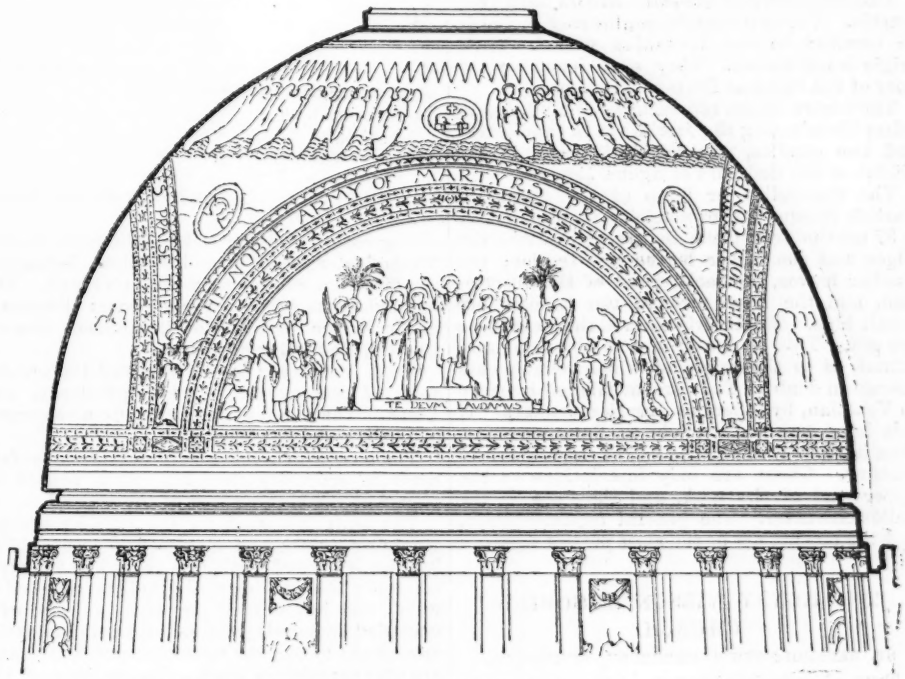
* Theobalds was dismantled by order of Parliament during the Commonwealth, and the commissioners estimated the value of the materials at 8,275*l.* 11s.

† *Vide* Walford's "Greater London," vol. i., p. 384.

THE DECORATION OF ST. PAUL'S.

Sir,—I should be much obliged if you could kindly allow yet another scheme for the decoration of the cupola of St. Paul's to appear in your valued review.

The architectural framework adopted in Mr. Poynter and Sir Frederick Leighton's design follows, in its main lines, the sketch left by the late Mr. Alfred Stevens (see the *Builder*, 5th July, p. 11), and in the different design exhibited by Mr. Stannus (see the *Builder*, Sept. 6, p. 331) the space is divided in a somewhat similar manner.



Mr. Wild's Suggestion for the Decoration of the Dome of St. Paul's.

Whether a painted architectural framework dividing the smooth surface of the cupola be advisable is a matter upon which different opinions may be held, but this, at least, must now be clearly seen, that by the division into eight parts by eight broad bands, or ribs, again sub-divided into variously-shaped panels, the spaces left for the figures become so small that they cannot be properly seen or understood by the spectator on the floor of the cathedral.

In the scheme that I now venture to suggest, the space would be divided into four main compartments, respectively opposite to the nave, the choir, and the north and south transepts, where only you can get far enough back to see them in comfort, without throwing the head painfully backward. These four divisions would be filled with figures on a gold ground, and bounded by nimbi bearing inscriptions. The spaces between them would be of a greyish blue, powdered with stars, and bearing the emblems of the four evangelists. Above would be a circle of angels, and the whole would be crowned by golden rays proceeding from the vertex.

The figures shown on the design were kindly sketched in for me by my friend Mr. Edward Armitage, R.A., who suggested that the four subjects should illustrate the "Te Deum Laudamus" from our morning service:—1. "The glorious company of the Apostles praise Thee." 2. "The goodly fellowship of the Prophets praise Thee." 3. "The noble army of martyrs praise Thee." 4. "The Holy Church throughout the world doth acknowledge Thee." The circle of angels above illustrates the verse, "To Thee all angels cry aloud."

J. W. Wild.

Sir John Soane's Museum, Nov. 10.

Illustrations.

READING-DESK: ANCIENT ARABIC.

THIS, and the bas-relief and lamp figured in another illustration, constitute a further selection from photographs of articles in the Museum of the Mosque El-Hakem at Cairo, forwarded to us early in the present year by H. E. Franz Bey, chief architect to the Egyptian Government; other examples of which have been already published (see *Builder* of July 19 and August 16 of this year).

This illustration shows the side and back of a reading-desk (used for reading the Koran), which formerly stood in the Gismas-el-Ishagi Mosque in the "Derb-el-Ahmar" quarter. It was made in the fifteenth century. The constructive parts are rather coarsely made, but the panelling (greatly damaged), which is inlaid with ivory, and ebony, and shells, is of exquisite finish.

BAS-RELIEF AND LAMP: ANCIENT ARABIC.

THE sculptures in bas-relief are on light grey marble. The two heraldic eagles may probably be ascribed to the Transition period. Their origin is not known. They were found on the floor of the baths at Derb-el-Gamanus.

The centre piece, representing the symbol of Islam illuminating the world, viz., a candlestick and two candles, was found immured in the Kiblah of the Bedredin el Agami Mosque.

The chandelier or lamp of the Sultan el Barkuk Mosque is shown below. Its total height is 37 centimètres, made in greenish glass; the edges and the larger leaves are scarlet; the smaller leaves, the background of the inscription, and the frieze around the handles are cobalt blue. The inscription and the medallions are gilt. This is one of the five lanterns still extant, as to the origin of which connoisseurs remain in doubt. They are attributed by some to Venetian, by others to Assyrian, makers. If this lamp was really made to Barkuk's order, then its date would be the end of the fourteenth century. There are only inscriptions on the upper part of the neck, and they are in the Sallus character. The general ornamentation, and the enamel are of the most perfect finish.

THE HENRY WILSON MEMORIAL CHURCH.

ST. BARTHOLOMEW'S, CARBROOK, SHEFFIELD.

THIS church is about to be erected as a memorial to the late Mr. Henry Wilson, of Westbrook, Sheffield, whose benefactions to church work in all ways and many countries are well known.

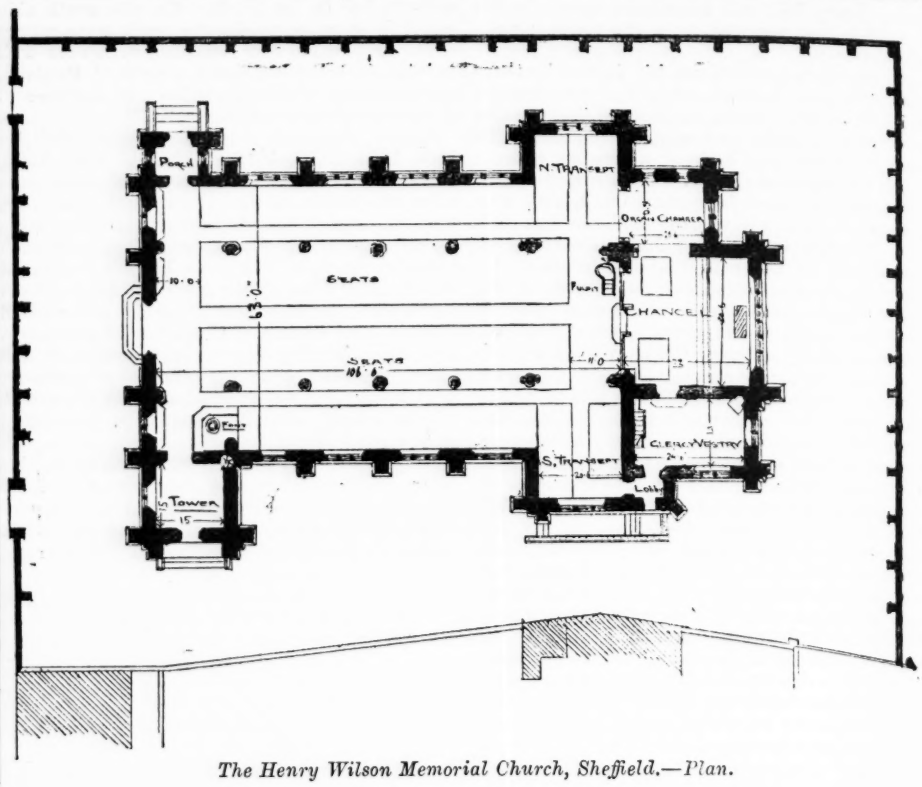
The plan, as will be seen, consists of nave, north and south aisles, north and south transepts, chancel, clergy vestry, and organ-chamber, also choir vestry and large parish-room beneath the chancel. The tower at the south-west corner of the nave is 100 ft. to the top of the parapet. Huddersfield stone will be used for the dressings and Oughtibridge stone for the walling. The inside face of the chancel will be of dressed stone. The woodwork generally will be of deal and pitch-pine, and the chancel fittings of oak.

THURLOW TOWERS, KNOLLYS-ROAD, STREATHAM.

THIS house, the residence of Mr. Michael Pope, lately erected from the designs of Messrs. Batterbury & Huxley, architects, of 29, John-street, Bedford-row, and Berkhamsted, is situated on part of land formerly of Edward Thurlow, Lord High Chancellor of Great Britain, who was Lord of the Manor of Leigham Court, and probably of the adjoining manor of Gillians, now called Julians, or St. Julian's. He held other property, and resided at Knight's Hill, Norwood.

The manor of Leigham, or Leigham's Court, in fact, belonged to Bermondsey Abbey till the Suppression, when it was given by Henry VIII. to Henry Dowes, clerk. It was several times transferred, and at length passed by marriage, in 1752, to George, fifth Duke of St. Albans, who, in 1785, sold a portion, and, in 1789, the remainder, to Lord Thurlow.

The staircase window has painted glass portraits of Lord Thurlow, with his arms and motto, "Justitiæ soror Fides"; also of Homer, Chaucer, Camden, Dante, Scott, &c. In the



The Henry Wilson Memorial Church, Sheffield.—Plan.

dining-room the upper lights exhibit St. Paul's, Westminster, Harrow, and Windsor, indicating the direction whence they can be viewed. The painted glass in the drawing-room illustrates music in the portraits of Beethoven, Mozart, Rossini, Handel, and others.

From the tower can be observed the greater part of Surrey and Berks, Middlesex, and Essex. The north view gives quite a panorama of London and the West End.

The site, which has a very considerable fall, made it necessary that the house should be placed at the highest part of the ground.

The materials used for the exterior are red Ditchling bricks and Box-ground stone. The interior is treated with due regard to the style adopted; the roof over the hall is panelled in wood, and has curved principal rafters with traceried spandrels; the ceilings under galleries around the hall of the tower and entrance lobby are also panelled in wood. The ceilings of the dining and drawing rooms have moulded panels in plaster, the enrichments being modelled by Mr. H. Pain, of 47, Highgate-road. The painted glass already referred to was executed by Mr. E. H. Walden, of 87, Albert-street, Regent's Park. The owner's crest and the enriched panels, &c., over the tower entrance, were carved by Mr. George Frampton, a medallist of the Royal Academy.

The contract for the foundations and the concrete walls, to the plinth level, was intrusted to Mr. H. Potter, of Redwald-road, Lower Clapton. The superstructure was erected by Messrs. J. & C. Bowyer, builders, of Westow-street, Upper Norwood, the foreman of the works being Mr. H. Allen. The view of the house here given is drawn by Mr. A. B. Pite.

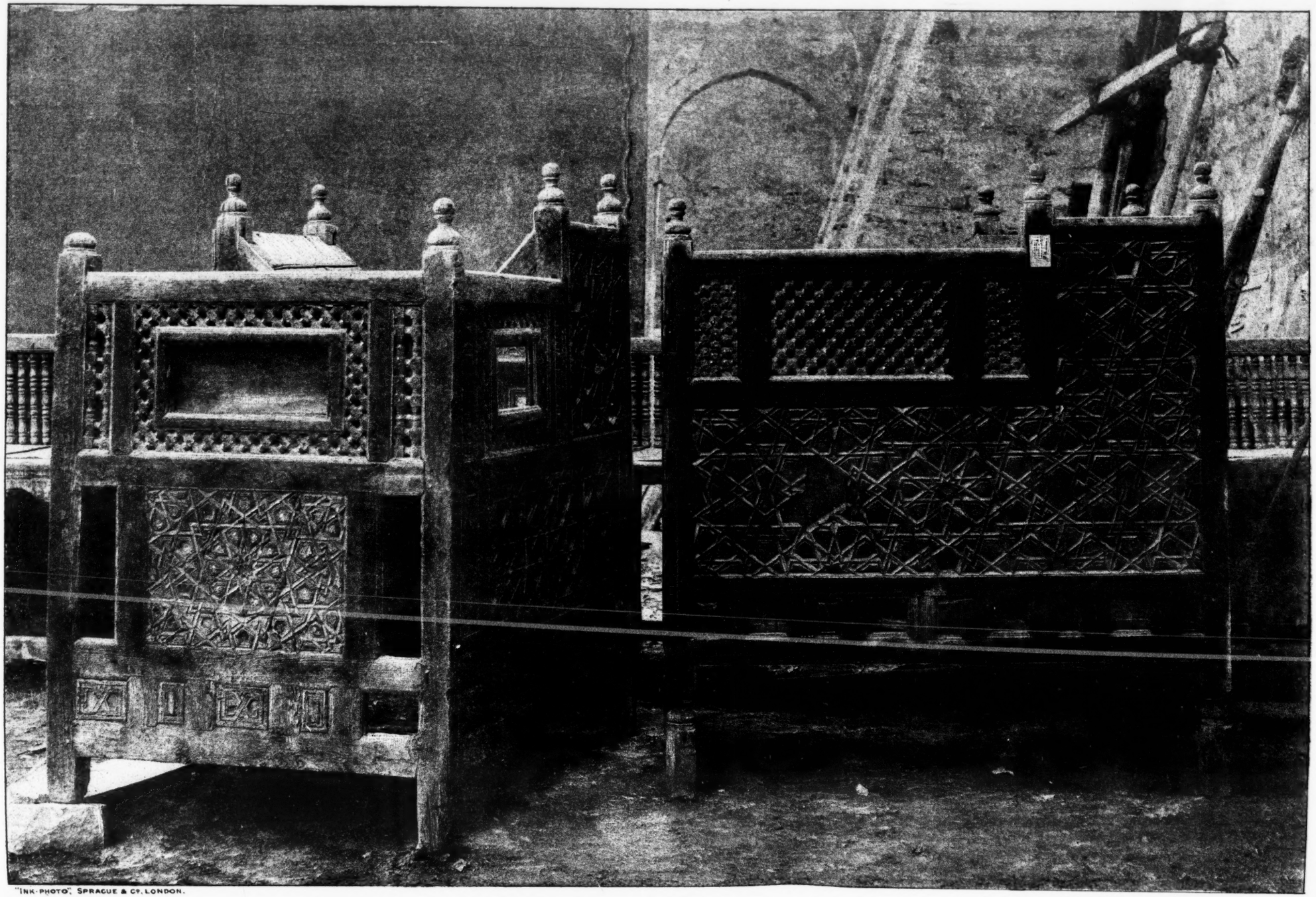
Projected Improvements at Westminster.—Application is intended to be made in the ensuing session of Parliament for leave to bring in a Bill empowering certain persons, or a company to be incorporated, to make and maintain the following works:—To widen Parliament-street on its western side, between Charles-street on the north and Parliament-square on the south; to widen Charles-street on its southern side, between Parliament-street on the east, and Delahay-street on the west; to widen Delahay-street street on its eastern side, between Charles-street on the north and No. 4, Delahay-street on the south; and to construct a new street from Parliament-street to Delahay-street. Powers are asked for the compulsory purchase of lands for the works and additional lands between Parliament-street and Delahay-street, and Charles-street and Great George-street, and the Bill will contain clauses as to agreements with her Majesty, the Commissioners of Woods and Forests, the First Commissioner of Works, the Metropolitan Board of Works, and the Westminster District Board of Works.

ARCHITECTURAL SOCIETIES.

Edinburgh Architectural Association.—At a meeting of this Association, held on Monday night,—Mr. G. W. Watson, president, in the chair,—Mr. James Gowans read a paper on "The Laying-out of Feuing Ground and Planning of Houses."

Manchester Architectural Association.—The first ordinary meeting of the above Association took place in the old Town-hall, King-street, on the evening of Tuesday, November 11th. The Vice-President, Mr. A. H. Davies-Colley, in the absence of the President, Mr. J. Medland Taylor, addressed the meeting. Mr. Colley was of opinion that architects of late years were receiving more public attention, and that people were gradually becoming convinced how necessary the profession was for their daily wants and comforts. The demands on the architect had of late years greatly increased, and he thought that division of labour was very desirable for the production of good work. He was further of opinion that a young man would in the future succeed best if, having mastered the ground work of his profession, he devoted his time to one special branch of his calling. He next referred to a proposal that the Liverpool Society and the Manchester Association should combine together in the publication of a sketch-book. The prizes for the session 1883-1884 were awarded as follow:—Elementary Class of Design. 1st prize, Mr. P. E. Barker; 2nd Prize, Mr. T. R. Wrigley.—Elementary Class of Construction. 1st prize, Mr. T. L. Worthington; 2nd prize, withheld. Mr. T. Chadwick supported the suggestion concerning the sketch-book. Mr. J. S. Hodgeson supported the proposal concerning the joint sketch-book. Mr. F. W. Mee and Mr. J. H. Woodhouse also addressed the meeting. Mr. T. L. Worthington suggested that steps should be taken to bring the Manchester Society of Architects and the Association in more direct connexion, more especially as regarded the prizes offered annually to students. Mr. J. Brooke opposed such a suggestion, and thought that the two bodies had different motives and interests. He also considered specialism in the case of the architect was almost a practical impossibility.

Post Office Extension.—The *City Press* says that it is proposed to make an entire clearance of the buildings between the northern end of the new Post Office and the Money Order Office, thus absorbing nearly, if not quite, the whole of Bull and Mouth-street, with its private business houses and railway booking-offices, with some half-dozen houses also in King Edward-street, while two other large buildings, one of a sacred and the other of a secular character, are also included in the general sweep. These are the French Protestant Church and the Queen's Hotel.



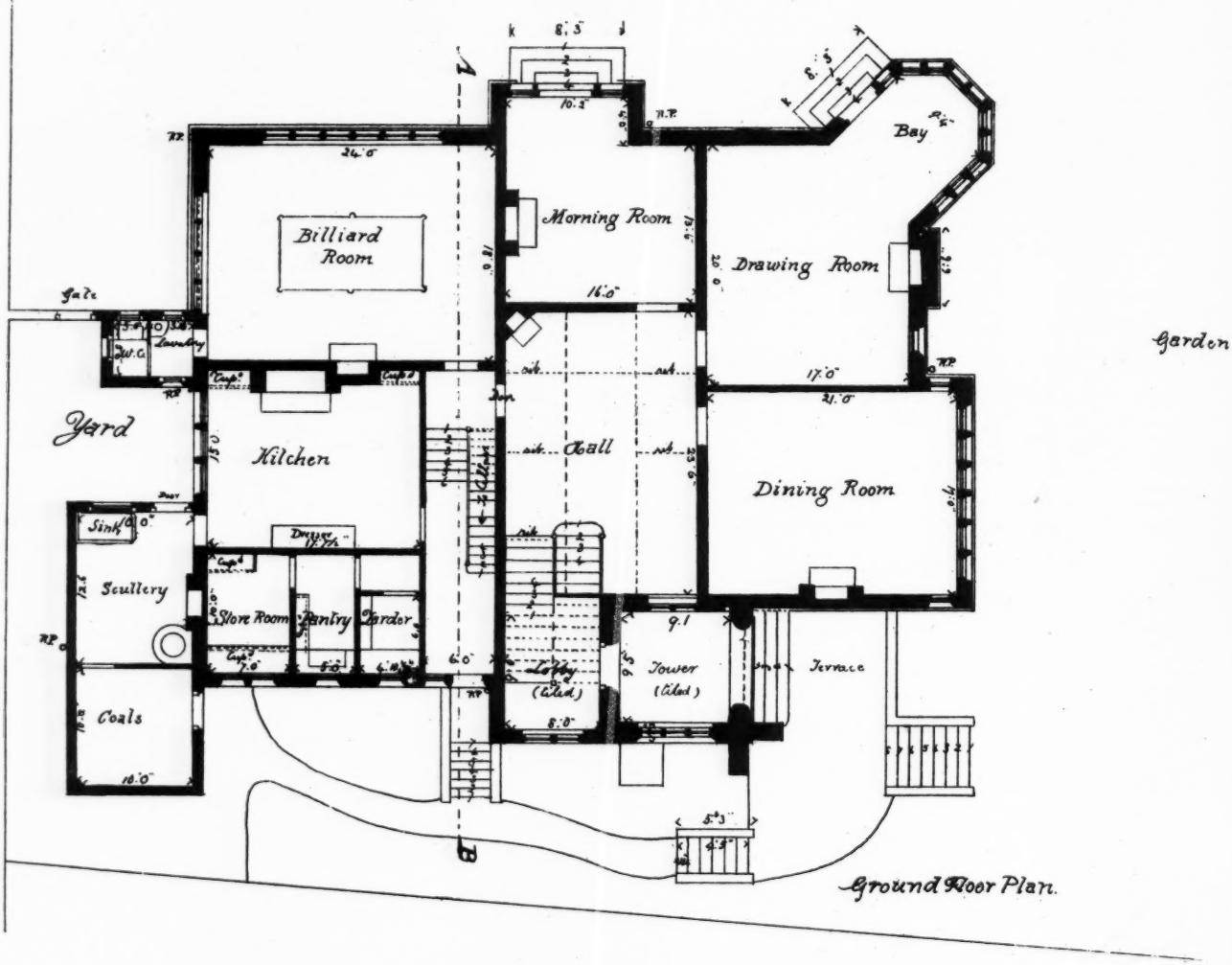
"INK-PHOTO," SPRAGUE & Co., LONDON.

READING DESK: EARLY ARABIC.

MUSEUM OF COMP. ZOOLOGY, HARVARD.

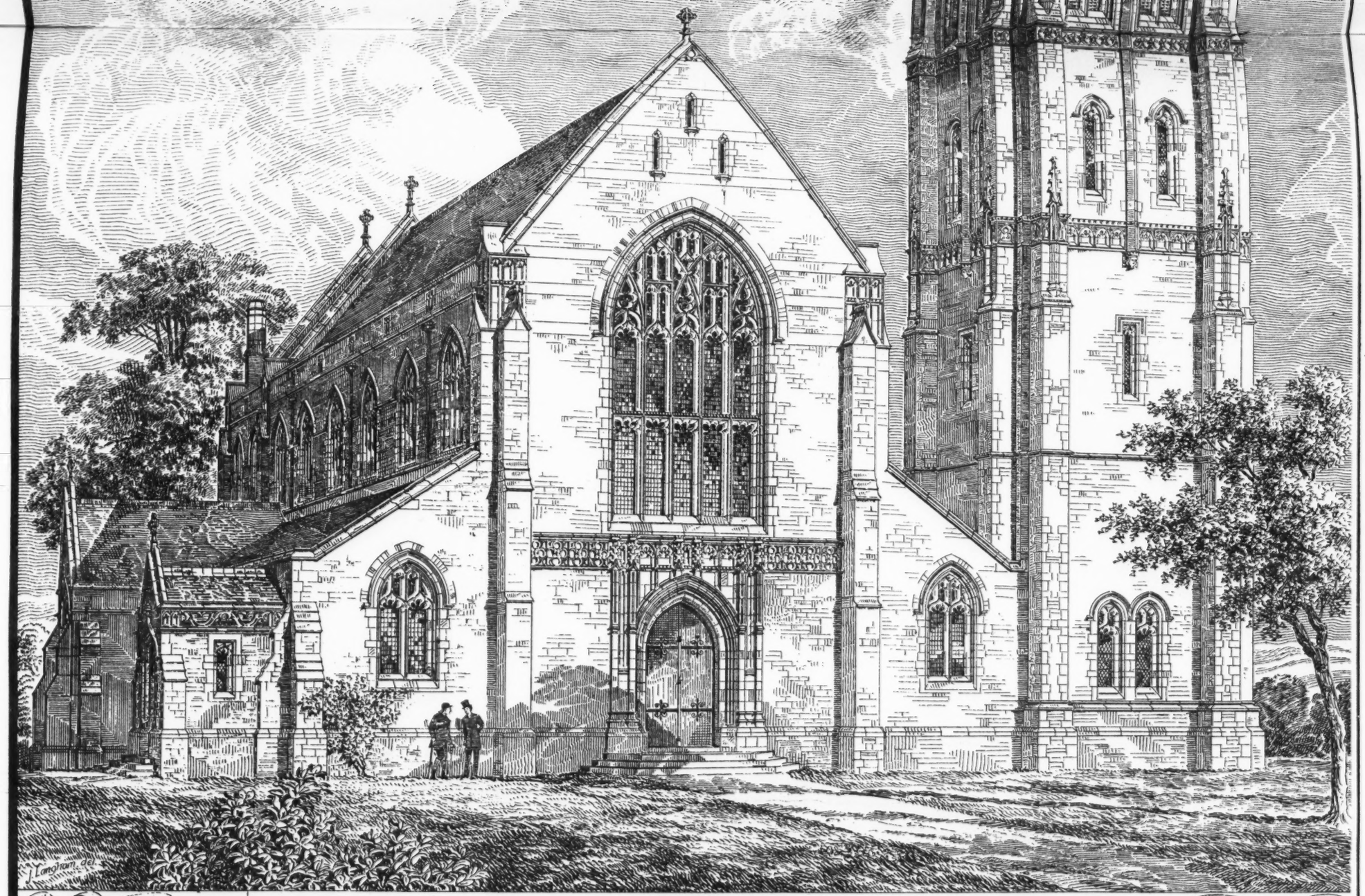
THURLOW TOWERS Knollys Road Streatham

for M. Pope Esq. Messrs Batterbury and Huxley Architects



C. F. Kell, Photo-Lith. & Printer.

8, Castle St. Holborn, London, E.C.



THE HENRY WILSON MEMORIAL CHURCH ST BARTHOLOMEW'S, CARBROOK, SHEFFIELD.

J. D. WEBSTER, FRIBA ARCHITECT.

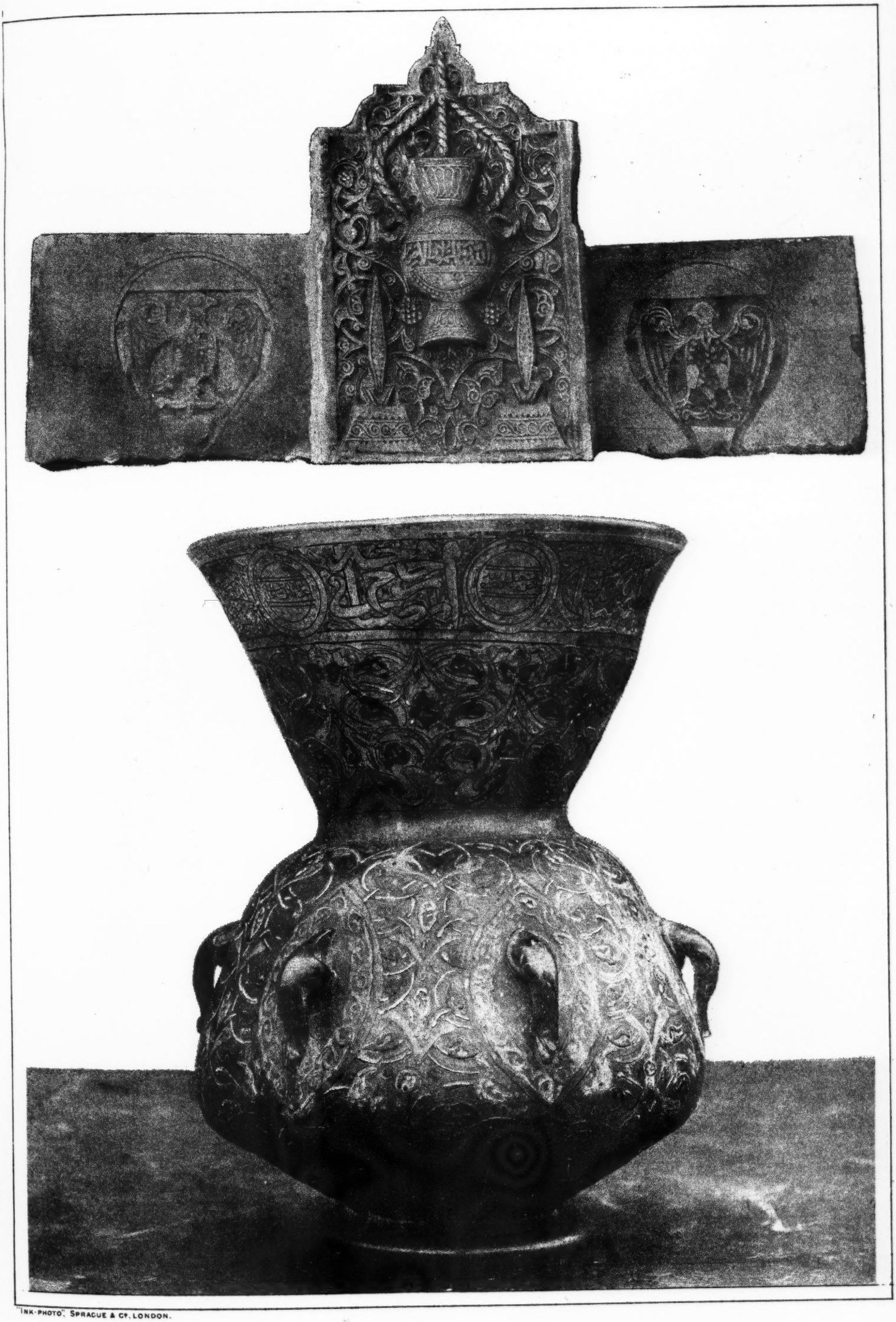
C. F. Kell Photo-Lith. & Printer. 8, Castle St Holborn, London, E.C.

C.F. Kell Photo-Lith & Printer.

8, Castle St. Holborn, London, E.C.

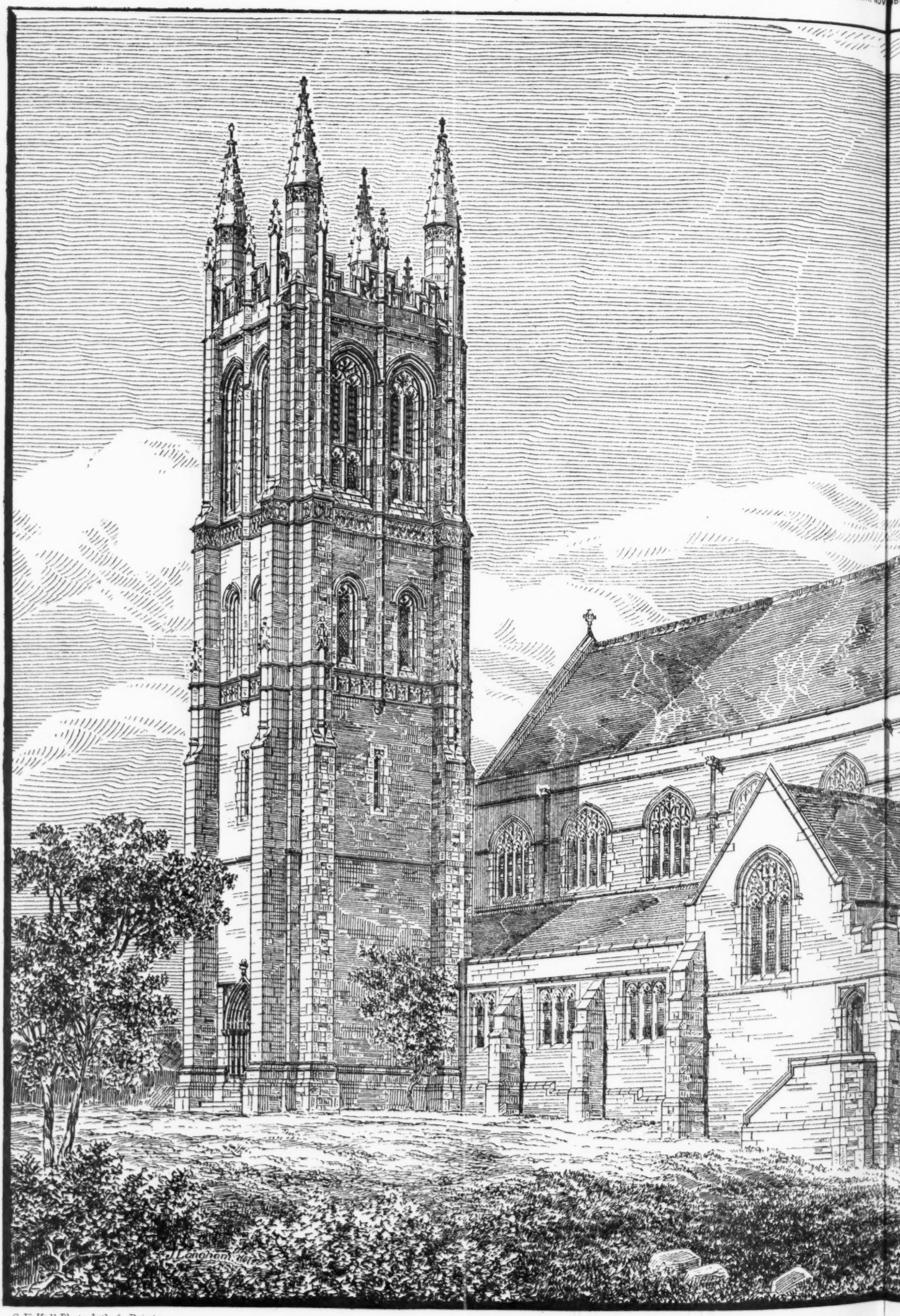
Thurlow Towers · Streatham.

Messrs. Batterbury & Huxley
Architects. 1884.



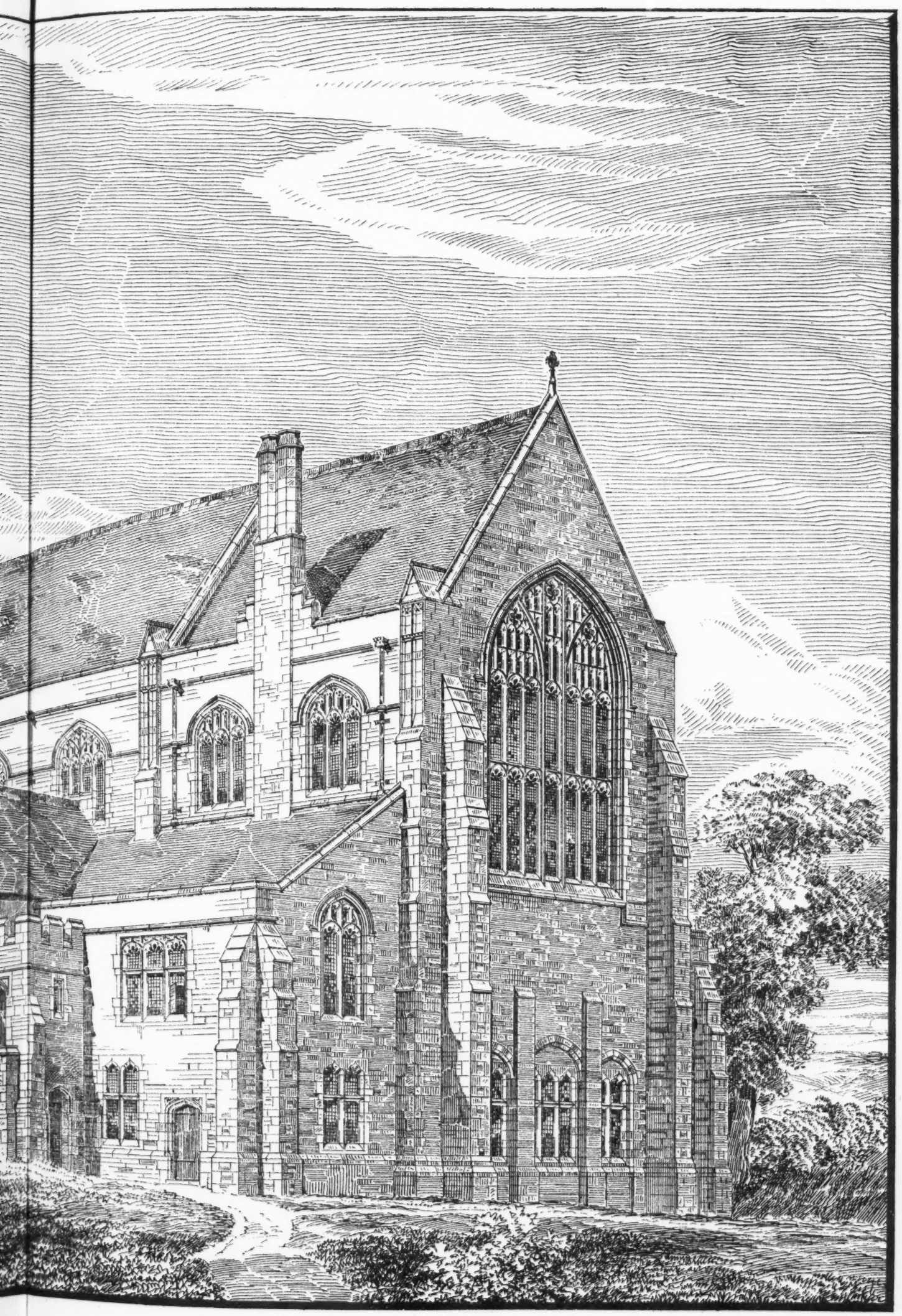
"INK-PHOTO." SPRAGUE & Cº. LONDON.

BAS-RELIEF & LAMP: EARLY ARABIC.



C. F. Kell, Photo-Lith & Printer.

THE HENRY WILSON MEMORIAL CHURCH



8, Castle St Holborn, London, E.C.

ST BARTHOLOMEW'S, CARBROOK, SHEFFIELD. J.D. WEBSTER, FRIBA ARCHITECT.

THE LANDING OF ST. AUGUSTINE ON THANET.

To an Englishman, and not, as might be expected, to any Roman writer, are we indebted for what has been happily described as the earliest of "Canterbury Tales." Our Anglican Church must ever hold in cherished remembrance its story of the meeting, in the Forum which Apollodorus built for Trajan, of a patrician monk of the great St. Andrew's monastery which crowned the Caelian Hill and three fair slaves from the far-away kingdom of the Northumbrian Ælla. Every incident of the fascinating tale had been carefully preserved in St. Augustine's monastery at Canterbury. Together with other, perhaps less authentic, traditions of the ancient Kentish church, it was related to Bede, for his "Ecclesiastical History," by Albinus, abbot of that convent. So momentous have proved the results of the interview that it were not amiss to briefly recall who formed its chief actors, as well as what was the episode that immediately ensued,—an event about to be commemorated by the dedication of a monument at the landing-place of Augustine in England. We should picture to ourselves one who subsequently played so prominent a part in European history as to almost earn for himself the title of founder of Western Christendom. At that juncture Gregory was but a monk in the monastery which from its high pre-eminence amongst the pines still looks down, across St. Gregory's Church, upon Vespasian's Colosseum. Yet already had he become distinguished for a tenderness and a benevolence which neither knew nor made difference between the Pagan and those of his own new faith. To this day we are shown the marble table whereat from his own resources he used to feed twelve beggars each day. His active courage during one of the terrible plagues that attacked the Eternal City is commemorated in the modern name of Hadrian's Mausoleum. For it was on the summit of the Castle of St. Angelo that whilst chanting a solemn office for deliverance, by the Ælian Bridge he saw the Destroying Angel alight and sheathe his sword. Still it is with Gregory's tender regard for the young, and his lifelong efforts for the conversion of the heathen, that our tale is more concerned. The same solicitude that bade him pray for his beloved Trajan prompted the first question which arose to his lips on suddenly confronting the beautiful children from Deira. Are they Pagans or Christians? asked Gregory, who probably had never seen a Briton before. He listened, we are told, with a deep compassionate sigh to the slave-dealer's reply. Thereupon followed the well-known colloquy, during which, inspired doubtless by thoughts of a grand and novel project, he played, as was his wont, upon strange words, with the half-prophetic half-dreaming mystification of the visionary and enthusiast. Obtaining leave from the Pope to attempt an object dearest to his heart, he set out from Rome with a few companions, their departure being made in secret, lest the great love of his people should forbid so hazardous an enterprise. Barely three days have passed when an express messenger overtakes them at a spot whose name of Locusta he construes into a portent of evil omen against the continuation of their journey. His presence was urgently demanded nearer to home; the populace had attacked the Pope in St. Peter's; they are loudly clamouring for Gregory's recall.

More than ten years elapse, and his purpose is neither forgotten nor fulfilled. But he had not long occupied the Papal chair when he hears of circumstances which offer fair promise of success, or at any rate of a friendly reception to his mission. He learns that Æthelberht, king of Kent, an Æscing or descendant of Hengest, is married to Berchta, daughter of the Frankish Chariberht, king of the city and county of Paris. The queen, like to her own great ancestor Hlodwig, whom his wife Hlotildha had converted, was a Christian, and had taken the Bishop Luidhard to her new home. There was appropriated for their use a little chapel which stood close to her husband's palace at Longport, overlooking the main road (Watling-street) from Rutupiæ, along which Plautius had led his conquering legions. This chapel, seat of a departed Christian worship, she dedicated to the saint most popular in her country, St. Martin of Tours; and there on the hill without Canterbury stands its successor, embodying in its walls remain of Berchta's church. Taking his opportunity, Gregory sends forth Augustine, prior of his former convent on the Caelian Hill, together with forty associates, to confirm and extend the influence for good of the English queen. A deaf ear was turned to the remonstrances which the chosen band sent back in alarm to Rome at various stages of their voyage. Reinforced by some choristers and interpreters engaged in passing through Gaul they at length reached the coast of what they deemed to be the end or corner of the world,—the *angulus* of *Anglia*, as Gregory liked to call it. They touched ground in the customary parts; being the same locality whither Horsa and Hengest had come some 100 years before to the overthrow of Vortigern. The precise spot of landing is open to some debate. However, a generally-received tradition,—though the arguments for its acceptance are too complex for rehearsal here,—points to Ebbe's Fleet, by the estuary of the then broad Wensum or Stour, whose wide waters covered most of the now marsh land that lies between Pegwell Bay and Reculver. The Kentish king had stipulated at the outset not only that a river should flow between him and the missionaries, but, with his superstitious dread of enchantment, that no tree should throw its shadow across the ground. So, advancing from their bivouac in the field which is yet pointed out northwards of Ebbe's Fleet farm-house, the monks take station on an elevation in Minster marsh. From that promontory, then extending into the river's mouth, are now dimly visible the distant towers of Canterbury. Æthelberht and his court come forward in turn. The monks are seen to bear before them a big silver cross,—for as yet crucifixes, even as a device, are scarcely known,—with a picture of Christ painted and gilded. They are heard to chant a Litany to a strain which Gregory himself had composed. From their midst stands conspicuous the tall stature of Augustine: by his side are Lawrence, afterwards his first successor in the later metropolitical see, and Peter, first abbot of St. Augustine's in the Minster city. Neither party could understand the ordinary tongue employed by the other. When the interpreters have discharged their office, the king with native candour and in words whose genuineness,—that is to say, as to their having been actually used,—is undeniable, makes response as follows: "Your words are fair, and so are your promises, yet since they are novel and doubtful I cannot give them assent, and leave the customs I have so long observed with the whole of my Saxon race. But as you are come hither strangers from a long distance, and as I seem to myself to see clearly that what you yourselves believe to be true and good you wish to impart to us, we do not wish to molest you. Nay, rather, we are anxious to show you hospitality, and to give you all that is needed for your support; nor do we hinder you from joining all whom you can to the faith of your religion." Encouraged by this tolerant, albeit dignified and politic utterance, the monks cross the river at the old Roman stronghold of Rutupiæ, which survives in the ruins of Richborough Castle. Having been accorded another audience by the sovereign they proceed to his Kentish capital. On coming into sight of St. Martin's Church they break forth into a supplicating Litany which Gregory had harmonised during the plague at Rome that killed his predecessor, Pelagius. "We beseech thee, O Lord, in all thy mercy, that thy wrath and thine anger may be removed from this city and from thy holy house." Ever and anon they send up the jubilant cry of the older Hebrew worship which Gregory had wrested from the name of the Northumbrian king,—Alleluia! For a first abiding-place Æthelberht gave them Stable Gate, by a heathen temple close to the existing St. Ælphage's Church; and within a few months, on Whitsun-day, June 2nd, A.D. 597, he received the sacrament of baptism at the venerable font in his consort's church of St. Martin.

Transferred from their original grave at Reculver, the remains of the first Christian Brehtwalda were deposited next to those of his first wife, at the southern end of St. Martin's altar in Augustine's Abbey of St. Peter and St. Paul. There in A.D. 613 the bodies of the great missionary, together with those of Berchta and Luidhard, had also been laid. The several names we have mentioned still live in the sees for which Augustine summoned additional helpmates from Rome,—Justus to found that of St. Andrew at Rochester, Paulinus that of St Peter at York, Mellitus that of St. Paul in London, whence proceeded another St. Peter's,—our Great Western Minster on Thorney Island. It is surely fitting that the abbey which he dedicated to St. Peter and St. Paul should at this day be represented by that monastery, known by his name, which a recent benefactor has rescued from decay and re-established as a college of missionaries to the Colonial Church. It is as fitting that Lanfranc's vast cathedral, standing aloft over the ruins of St. Augustine's pristine foundation of Christ Church, should bear proud and lasting testimony to the establishment of Christian worship in this country. Nor is it less seemly that some material evidence should be supplied to mark the spot where Augustine first set foot on our island. By Lord Granville's care the stone cross is there being erected of which we gave an account in a recent number.* It does not appear, however, that the sculptured figures will include, as they certainly should, a figure of Pope Gregory the Great.

"NEW HOUSE," PAKENHAM, SUFFOLK.

THE following information in regard to this house and its family connexions and associations has been communicated to us, in relation to the references to the house, and to the Spring tomb at Lavenham, in some recent articles on the Architectural Association excursion:—

New House, Pakenham, Bury St. Edmund's, was originally a large brick mansion erected in an elaborate style of architecture by Robert Bright, of Netherhall, Pakenham;† "but some portion of the rear having been taken down many years ago, it is now considerably reduced in size." The date of 1622 over the front entrance refers probably to the year when the house was completed, it having been commenced two years before. Robert Bright willed it in 1630 to his son Henry, who sold it in 1653 to Sir William Spring, bart., M.P. for Bury and High Sheriff of Suffolk. The Springs at this time owned Pakenham Hall, a stone mansion surrounded by a moat which was pulled down at the beginning of the present century, and New House was purchased by this Sir William as a dower house for his lady, Elizabeth, daughter of Sir Hamon L'Estrange, of Hunstanton Park.

The family of the Springs‡ (of whom three were made knights and one a baronet) derived originally from Houghton, a village in the bishopric of Durham, which has always been called Houghton-le-Spring. They seem to have settled at Pakenham about the middle of the sixteenth century, but the first of the family who made any figure in Suffolk was Thomas Spring,§ of Lavenham, whose monument in Lavenham Church gives the date of his death Sept. 7th, 1486. His son, the wealthy Thomas Spring, had issue Sir John Spring, who was knighted by Henry VII. Sir John had issue Sir William Spring, knight, twice high sheriff of Suffolk. Sir William, by Susan, daughter of Sir Ambrose Jermyn, of Rushbrooke, knight, had issue John Spring, who married a sister of Sir John Trelawney, of Devonshire. John Spring's son Sir William Spring, high sheriff of the county, was knighted at Theobald's 1610-11. By Elizabeth, daughter of Sir William Smith, of Mount Hall, Essex, Sir William had a son William, who was created a baronet 1641. The first baronet had issue Sir William Spring, bart., who, by marriage with Sarah, daughter of Sir Robert Cordell, begat Sir Thomas Spring. Sir Thomas, the third baronet, by marriage with Merelina,‖ daughter and co-heir of Thomas, Lord Jermyn, had issue Sir William Spring, fourth baronet, who dying *s.p.*, divided his estate between his two sisters Merelina and Mary. The latter married John Symonds, D.D., of The Mount, Bury St. Edmunds, whose daughter De La Riviere became the wife of the Rev. John Casborne, of Drinkstone, the father of the late Rev. Walter John Spring-Casborne, J.P., who married Anne¶ (died June 9, 1884, aged

* See p. 342, *ante*.

† His descendants were living in 1860 in Massachusetts, U.S.A. *Vide* "The Brights of Suffolk," a rare and interesting book.

‡ For pedigree of Spring family, see "Visitation of Suffolk," pp. 166—200. Edited by J. J. Howard, LL.D. 1866.

§ The pew of the Springs, a highly-finished Gothic work, still remains, though decayed; and their armorial bearings are in many parts of the building.

‖ Through her grandmother, Mary Merry, descended from the Gages and Kytsons of Hengrave, and from Thomas d'Arcy, Earl Rivers.

¶ See *East Anglian Daily Times*, No. 4,835, for July, 1884, where an account of the Lofft family is given.

96), daughter of the well-known *littérateur* Mr. Capel Lofft, J.P., of Troston Hall, Suffolk, by Anne, the daughter of Mr. Henry Emlyn, F.S.A., the restorer of St. George's Chapel, Windsor, in the time of George III., and inventor of the so-called "British" style of architecture.

In 1578, when Queen Elizabeth visited Suffolk, "there were," says Churchyard, "200 young gentlemen clad all in white velvet, and 300 of the graver sorte apparelled in black velvet coates and fayre chaynes, all ready at one instant and place, with 1,500 serving men more, on horseback, well and bravely mounted, in good order, ready to receive the Queen's Highness into Suffolk, which surely was a comely troope and a noble sight to behold, and all these waited on the sheriffe, Sir William Spring, during the Queen Majestie's abode in those partes and to the very confines of Suffolke, but before her Highness passed into Norfolke there was in Suffolke such sumptuous feasting and bankets as seldom in any part of the world hath been seen before. . . . . The sheriffe, Sir William Spring, and divers others of worship kept great houses, and sundry either at the queen's coming or return, solemnly feasted her Highness, yea, and defrayed the whole charges, for a day or twayne, presented gifts, made such triumphes and devices as indede was most noble to beholde and very thankfully accepted." In the hall were many interesting portraits of members of the Spring, Jermyn, Firebrace, Barrett, Symonds, Blagge, and other families. In the early part of this century, however, no fewer than sixteen were maliciously destroyed, amongst them one of Dame Elizabeth Spring, *née* L'Estrange, in her weeds. There was also a portrait of Queen Elizabeth, said to have been presented by her Majesty to Sir William Spring when he entertained her in her "progress" through Suffolk, and also a likeness of Charles II.

At the death of the Rev. Walter John Spring-Casborne, *s.p.*, New House was sold, and has now passed out of the hands of the family.

Pakenham Church, which contains many memorials of this family, was originally a Norman structure. It was appropriated by Edward I. to the Abbey of Bury, and was granted at the Dissolution to the Spring family.

SEWAGE DISPOSAL AND ENSILAGE.

One of the papers read at the recent Sanitary Congress at Dublin was on "Sewage Disposal," by Professor Henry Robinson, who observed that experience during the past year or two has proved the feasibility of preserving green crops in a succulent state by compressing them in Silos, so that they can be utilised for cattle fodder in the winter. This system deserves notice in connexion with sewage farming, as it is likely to prove a valuable means of getting over the well-known practical difficulty which is experienced of finding a market for the large amount of green crop which is produced by sewage irrigation. In speaking of this system the term "Silo" is applied to the artificial chamber or receptacle for green crops (such as grass, vetches, clover, &c.). The term "Silage" is applied to the crop thus treated, and the term "Ensilage" is applied to the process of making "Silage." The details of the construction of Silos cannot be referred to here, beyond stating that what is required is to construct a pit or chamber either in the form of an excavation in the ground, with a brick or other lining, or by building it above the ground. The object is to enable the green crop to be deposited in an air- and-water-tight chamber, in which pressure can be applied to the crop to compress it. This is effected in some cases by well treading the crop after it is laid in the Silo, and then spreading layers of earth to about a couple of feet and pressing the covering well down. Another way is to construct the Silo with a movable covering of the exact size and shape of its interior. This cover is raised and lowered by suitable chains and rollers. After the crop is placed in the Silo the cover is lowered and weighted, so that a thorough compressing is effected, the weight applied giving about 200 lb. or so per square foot of surface. Salt is sometimes added as the crop is placed in the Silo. A crop thus dealt with is stored for months; when the Silo is opened the fodder is found preserved, and in a state readily taken to by cattle. It is desirable to choose the site for the Silos so that the fodder is preserved somewhere near the place of consumption; also to lay out the works so that as little handling as possible is required. For instance, the Silo should be on sidelong ground, so that the crop can be carted and tipped at a high level, and the silage taken out for use at a lower level.

The conclusions arrived at by Professor Robinson on the general question of sewage disposal are,—

1. That chemical precipitation is not so necessary now as it was considered to be a few years ago in cases where land for irrigation is not procurable.
2. That the efforts to profitably remove the manurial elements from sewage by chemicals not having been successful, the system should be adopted *per se* only where a filtration area cannot be obtained.
3. That the success which has attended the construction of filtration areas where the land is clayey, and the successful results which have been obtained from a combined straining of sewage and of subsequent filtration through small areas of artificial filters, point to the adoption of one or other of these systems in many cases where chemical treatment would previously have been advised.
4. That the injurious effects of passing untreated sewage into a river depend upon not merely the relative volumes of the sewage and the river, but chiefly upon the power of the river to oxidise the sewage, which power is in proportion to the extent of oxidisation of the river itself.

NOTES FROM BIRMINGHAM.

Three new schools, to accommodate 1,000 children each, are now being built for the Birmingham School Board in Cowper-street, Ada-street, and Stratford-road, and additional class-room accommodation is also being provided to eight schools already built; and it is understood that other land is being sought on which to build more schools until provision is made in efficient schools for all children in the borough of school age.

Attention has been paid in the principal school in the town,—King Edward's School in New-street,—to the requirements of physical education, as well as that of mental education, and the governing body have recently expended a very considerable sum of money in erecting and equipping a large gymnasium for pupils of both sexes. The building is erected on land at the back of the school, and a regular professor of gymnastics has been engaged. It is intended to extend the advantages of this physical education to the branch schools in Camp Hill and Aston.

Some time ago a wave of opinion passed over the town, that in spite of all the efforts which have been made during recent years to pull down and repair and drain the worst of the habitations of the working classes, there yet remained a great deal of property of that class which ought to be removed. Occasionally, a coroner's inquest disclosed conditions of life incompatible with decency, or healthfulness, or morality, and public indignation compelled recognition of the subject in the Town Council, who appointed a committee of their own body, under the presidency of the Mayor, to sit and take evidence from whoever chose to tender it. A general overhauling of the town took place by members of the Town Council other than the committee, and these amongst the rest gave evidence of what they had observed. This evidence showed beyond doubt that the Health Committee and their inspectors had been very lax in putting into force the powers they undoubtedly possess, and that a great deal of insanitary property was occupied by the working classes. The forefathers of this generation absolutely neglected both public and private improvements, they were so busy making money, and a great legacy of old tumble-down insanitary property has been left for this generation and its successors to remove and replace with decent and convenient dwellings and other buildings; and although much has been done in that direction in providing public buildings, it is worse than useless to shut the eyes to the fact that a great deal remains to be done yet in providing decent dwellings for working people. A proposal was made to the Committee to provide large blocks of artisans' dwellings similar to those in London and elsewhere, but it was shown that the general feeling here is against them, and that Birmingham artisans much prefer small self-contained cottages, which they can occupy entirely with their own families. A further proposition arising out of this discussion was that the new tramways, which will shortly connect the centre of the town with the suburbs, in all directions, should take passengers at penny fares the whole distance morning and evening, somewhat as the workmen's trains on the metropolitan lines do in London, and an effort to secure this arrangement is now being made. Besides the old tramways connecting the centre of the town with Bournbrook and Hockley, three new lines are already laid to Villa-cross, Birchfield, and Perry Bar, to Moseley village, and to Nechells. These are ready for use, and several others are being contracted for.

The old extensive premises in Fazeley-street, which were formerly used as gas works, have lately been undergoing transformation to fit them for an ice manufactory. There is a large and deep artesian well there which will be utilised for the water supply. It is said that Messrs. Fellows and Morton, the proprietors, are expending 10,000*l.* in fitting up these works, and one wonders whether they contemplate a long succession of such hot summers as we have recently experienced to recoup them for their outlay.

The suburban village of King's Heath, which lies on the Midland line towards Bromsgrove, has lately had a very important building erected in its midst, in extension of a nucleus begun by Mr. Nettlefold. This consists of a public hall to accommodate 600 persons, with stage arrangements for dramatic performances, library, coffee and reading room, rooms for working men's club, &c. It is now being decorated, and is a very effective building, and has been erected from the designs of Mr. R. F. Matthews, architect, Birmingham.

Twelve months ago, as was reported in the *Builder* at the time, the Messrs. Tangye, Limited, engineers, of Smethwick, near Birmingham, who employ several thousand men, determined to reward their workmen to a greater extent than was represented by wages. They then issued bonds for 100*l.* each to about one in forty of their men, such bonds to bear dividend the same as their other stock or shares, but to give no voting power in the management of the works. In the case of the death of the bondholder, his wife or children might receive the value of the bond in cash, or in other ways, for their benefit. At the annual meeting of the Company, just held, the chairman, Mr. Richard Tangye, announced that they had determined to issue further bonds, so as to increase the bondholders to one in twenty-five. The accident fund, initiated at the same time, had also been successful; no fatal accident had occurred, and less than fifty accidents of any kind, more than nine-tenths of which would not come under the Employers' Liability Act.

The hoarding has now been removed from the pediment over the principal entrance to the new Art Gallery, disclosing the sculpture therein. The central figure represents Fame seated, with a wreath in the left hand resting on the knee, the right hand held out as addressing a female figure, representing Painting on the one side, and a male figure kneeling on the other, and having a sculptured figure resting on the arm, as representing Sculpture, while two very chubby children, engaged in painting and sculpture, fill up each of the two lower angles of the pediment respectively. Mr. Roddis, of Aston, is the sculptor.

St. Philip's Church has recently been reopened, having had its chancel taken down and lengthened. The works have been carried out under Mr. Chatwin, architect. E. G.

Hydraulic Door-spring.—Messrs. Archibald Smith & Stevens send us particulars and drawings of Stevens & Major's patent hydraulic spring and check for swing doors, and for regulating the closing of doors so as to prevent banging. This spring is made to fix flush with the floor, and can be even covered with a carpet, and acts as a hinge also. If it does efficiently what it professes, it ought to prove very useful. The patentees give the following general description of the principle of action:—"The spring is placed within a small pump barrel. On opening the door, a charge of oil is drawn from the containing-box into the pump. The spring, while closing the door, has to expel this charge of oil through a small aperture, the size of which is adjustable, and the rate of closing is controlled by the speed at which the oil is allowed to escape. All parts are of metal, and, as oil is constantly passed through, every part is always perfectly lubricated." Simple means of regulating the action for faster or slower closing are provided.

LONDON AND MIDDLESEX ARCHÆOLOGICAL SOCIETY.

THE recently-announced *conversazione* of this Society took place on the 12th inst. at Skinners' Hall, Dowgate-hill, by permission of the Master, Wardens, and Court of Assistants of the Company, when upwards of 300 ladies and gentlemen, members and friends of the Society, attended. Among the many objects of interest exhibited in the hall were specimens of Roman sculpture excavated in Bevis Marks, and models of some found in Camomile-street.

The proceedings of the evening were commenced by a paper read by Mr. G. Lawrence Gomme, F.S.A., "On the Early Municipal History of London."

"Reminiscences of the Church and Parish of St. John the Baptist-upon-Walbrook" was the title of the next paper, and this was read by Mr. Henry Mathews, architect, who said that for more than five centuries the Skinners' Company had been identified with this parish. The ancient Wall-Brook, as was well known, was navigable for small craft from the Thames to Barge-yard, Bucklersbury, and was crossed by several bridges; one in Cloak-lane was named "Horse Shoe Bridge." Afterwards the Brook was arched over in brick and became a common sewer. This old sewer has for many years been disused, but the relics of it were still to be found in the garden of the Skinners' Hall. In the old church were two monuments of note, one to the memory of John Stone Taylor, sheriff in 1464, and the other to William Comberton. Under an order of James I. in 1610, "that all churches should be repaired and made fit for the service of God," the vestrymen resolved that the mason's work of the church be repaired "from top to bottom," and all things necessary thereto. The first church was probably built not later than *temp.* Edward III., as the excavations for the District Railway works had disclosed the immense thickness of the rubble work, and particularly the foundation of the original tower. The church was partly destroyed by the Great Fire, though the Tabernacle, as it was termed, was repaired and used as a place of worship till the church of St. Antholin was built, and the two churches united. The remaining materials were then removed or buried, and the site laid out as a place of interment. Since then it has been laid out as a garden, and so continued till the ruthless hand of the railway contractor would have obliterated every trace of its sacred purpose had not a provision been made by the Act of Parliament that every vestige of human remains should have a receptacle in a new vault 20 ft. below the surface, which has been provided, and the whole hermetically sealed. In a few months, a monument will be erected over the crown of the arch as a memorial of the dead and the ancient church of St. John the Baptist-upon-Walbrook.

A third paper read was "On the recent Discoveries made on the Line of the Inner Circle Railway and at Bevis Marks," by Mr. John E. Price, F.S.A., the hon. sec. of the Society. Mr. Price said that in making the necessary excavations for the Inner Circle Railway, the contractors came upon the remains of one of the bastions which formed part of the old London wall. This contained several sculptured stones of much interest. Fortunately, the contractors at once put a stop to the excavations, erected supports under the gas and other pipes which had been placed above it, and allowed the Society to make sketches, *in situ*, and afterwards took means for the protection of the stones. Eight years ago, a gentleman had called upon Mr. W. H. Overall, the librarian at the Guildhall, and told him he had found some extraordinarily large stones whilst making excavations in St. Mary Axe, which appeared to be the remains of tombs, temples, and other Roman buildings. These were preserved and placed in the Guildhall Library. On reference to Aggas's map, it would be found that four bastions were shown, each with a tower at the top, so that at that time (*temp.* Elizabeth) they were still standing. During the last six years portions of the Roman wall with these four bastions had been excavated. These bastions seemed to have been built in Mediæval times for the purpose of strengthening the wall, and that was probably the reason why these large Roman stones were used for their bases. They would have to take whatever material they could find, and these were of such a size that they would not have been brought from any great distance. The first bastion was discovered in Camomile-street, the second also was near there, the third being in John-street, Minories, and the fourth in Castle-street, Bevis Marks. The Society had now examined each of the four bastions. Amongst the objects discovered at Bevis Marks was a sarcophagus, 8 ft. long, and some Roman inscriptions.

COMPETITIONS.

Board Schools, Egham.—We have received the following letter:—

Sir,—The Egham School Board, after long and careful examination of the fifty-four designs forwarded to them in the above competition, assisted by competent advisers and the Education Department, to whom a limited number of the designs were sent for approval, have decided to adopt the plans submitted to them under the motto "Pour les Enfants," prepared by Edward Harnor, esq., A.R.I.B.A., of 8, John-street, Adelphi. The second premium of 15*l.* has been awarded to J. Sargeant, esq., of Grosvenor-gardens, London, author of design forwarded under the motto of "Measure for Measure." The rejected designs (with the exception of one, on nine large frames, sent under the motto of "Light and Air," without address) have been returned, carriage paid, to their respective owners.—Yours faithfully, BENJAMIN TICE,
Hon. Clerk to the Board.

Beaconsfield Club, Nottingham.—In a limited competition, the plans of Mr. William Graham Lees, architect, of Nottingham, have been selected for the Beaconsfield Club in that town.

BAD MORTAR.

DEMOLITION OF BUILDINGS.

ON the 16th of August, 1882, Simeon Murray, a builder, of Hackney, was summoned under section 17 of 41 & 42 Vict., c. 32, by the District Surveyor for East Hackney, for using mortar in two buildings not composed of fresh-burned lime and clean sharp sand or grit without earthy matter, in two houses at Shepscott-road, Hackney, as required by the Board's By-law No. 2, made under the above Act, and was fined 3*l.*, and 2s. costs. No alteration having been made in the buildings, the Metropolitan Board of Works took proceedings under the second part of section 17 of the above Act, for an order to demolish the buildings in question, and on the 21st day of December, 1882, Mr. Bushby, sitting at the Worship-street Police-court, made the order.

Immediately upon the order being made, the defendant, who had in the meanwhile mortgaged the premises, instituted an action in the High Court to restrain the Board from putting in force the order; but upon the hearing, the plaintiff did not appear, and the verdict was entered for the Board with costs.

The Board have now proceeded to put in force the order, and have taken down the walls of one house, and the demolition of the other house, which is at present tenanted, will be also at once proceeded with.

The above action on the part of the Board involves a serious loss to the mortgagees, as practically now their security for advances to the mortgagor has vanished.

CASE UNDER THE METROPOLITAN BUILDING ACT.

WHAT IS A PUBLIC BUILDING?

THE Manager of the Metropolitan Asylums Board was summoned to Worship-street Police Court on Wednesday by Mr. Meeson, surveyor of East Hackney (North), for not giving notice of certain public buildings in Brooksby's-walk, Homerton, and for not depositing plans of the same.

A solicitor represented the Board, and the question turned on whether the building in question was a public building within the meaning of the Act.

It was admitted that the building,—an extensive range,—adjoined the already-erected fever hospital. Its purposes were for the storage of the ambulances, stabling for the horses, and rooms for the coachmen and nurses of the ambulance service. It was contended that as the public would not be admitted to any part of the building, and as the building was not attached to the hospital, it was not public.

Mr. Meeson contended that the buildings were part of the hospital under the direction of the Board, and were paid for by public funds.

Mr. Hannay (the magistrate) said the Act was difficult to construe, but he came to the conclusion that the building was a public building, therefore he fined the Board 2s. A case would be granted for the High Court if desired.

Paperhangings at the Health Exhibition. Messrs. William Woollams & Co. write to point out that their name was incorrectly inserted in our list of awards at the Health Exhibition as "Woollams, Williams, & Co." It should be "Woollams, Wm., & Co." The error if uncorrected is likely to lead to confusion, since there is not only another "Woollams," but also a "Williams" in the trade.

THE NEW NATIONAL LIBERAL CLUB.

SIR,—I am glad to see you have taken "note," as many have done, of the controversy in the *Pall Mall Gazette* over Mr. Waterhouse's design for this important building. You sum up the matter at issue exactly, as it seems to me, in your concluding words, "The most important point is the statement that Mr. Waterhouse had designed something much better and after his own heart, and was prevented from carrying it out by the intervention of bumbledom," and Mr. Waterhouse has never yet denied this. I was about to write to the *Pall Mall* when I noticed they had closed the correspondence; but what I wished to draw attention to is this, that judging from a view of "Whitehall-court" which has recently been published, it seems manifest "Bumbledom" has interfered to some purpose. I have no desire to say anything about the design of Whitehall-court as such, except that it does not promise much relief from "the general harmony of the district," but it must be apparent to everybody who looks at the view that the club has been made a mere cat's-paw of to enhance the size and "grandure" (*sic*) of the court. The spectacle of their club-house, tacked on in this fashion to the end of the company's residential chambers, and made to play second fiddle to assist the company's dividends, must be a humbling reflection for the members, if, in point of fact, this is all they are allowed to get for their 120,000*l.* of outlay.

Another question, also, is being pretty freely asked, What is the use of the Institute if it cannot protect one of its most distinguished members,—one of its own vice-presidents,—from being sat upon in this manner? It is always claiming to be the representative of the profession. If what we are told is true, here is a professional grievance. Will the Council take it up on professional grounds, and make a remonstrance against such high-handed procedure? If not, one can hardly wonder why its members are snubbed with impunity by the so-called "Crown authorities." If not, what is the use of being a member? F. S. A.

*** The Institute could hardly take up the matter unless Mr. Waterhouse requested them to do so. That gentleman has not, so far, we believe, made any positive public statement of having been architecturally aggrieved in the matter; he has only allowed such a statement to pass uncontradicted. We may, of course, draw our own conclusions, but the Institute could hardly act on "conclusions."

WESTMINSTER HALL AND MODERN ARCHITECTURE.

SIR,—Mr. Tarver's definition of modern architecture, in your issue of the 8th inst. [p. 641], is certainly an ideal one; but I fear it is open to serious question. There are certain developments of our architecture to which the epithet "modern" is unfortunately specially applicable. As types of these, take some of our new big hotels, and what I would call generally our "street-corner" architecture, or, as another phase, our shoddy suburban builders' houses. Now all such buildings are very distinctly characteristic of the age we live in; but while certainly "left free to express themselves" (a great misfortune), they can hardly be said to do so either "honestly" or "beautifully," but rather very hideously, and, considering our present opportunities of study and enlightenment, it seems not extravagant to say that they constitute a national disgrace.

Reaching thus a sadly less ideal, but certainly more practical definition of "modern architecture," it is surely a matter of congratulation that the "Great Hall of William Rufus" is not about to be improved by erections "as modern in style as possible;" albeit Mr. Tarver does suggest a limit to their lack of harmony.

As a precedent for this limit we are referred to sixteenth-century prebendal buildings around our cathedrals. But is this to the point? We must remember that at Westminster Hall we have only monumental architecture to consider (although the *D. T.* would beautify it with a covering of ivy), and prebendal buildings are not monumental. Again, they are but parasites to the buildings they surround, while the proposed additions to the Hall form part and parcel of itself. In such case, in seeking for a precedent for harmony between old and new work, we must look for one which bears accurately upon the question, and we have not far to seek.

Who but an expert can tell that the nave of Westminster Abbey is of three distinct dates? And who have succeeded best? Its builders, who have not scorned to "imitate a past style," or the builders

of the western towers, who have refused to be "hampered by mere imitations"?

The precedent is good, and applicable, and fully justifies (if justification were needed) the architect's choice of style in his proposed *completion* of the exterior of Westminster Hall.

I use the word *completion* advisedly, for I believe this view of the question has been entirely overlooked, and is the only right one; and I say this after a most careful examination of the drawings, the site, and all that has been written on the subject.

Mr. Tarver admits he has not seen the drawings, but, if before writing he had taken pains to study the subject as I have, he would have found that the first of his excellent generalities, "that restoration for its own sake is a fatal mistake," never applied less than to this case, and that the remaining two as to "preservation" and "use" testify most strongly in favour of the proposals.

There is more than one way in which generalities are applicable to special cases.

A MEMBER OF THE ARCHITECTURAL ASSOCIATION.

SMELL FROM KITCHENER.

SIR,—I should feel greatly obliged if any of your readers could give me any suggestion as to an effectual remedy for above. My kitchener, of about 6 ft. frontage, is in the basement, and when any cooking is going on at all times (but I notice it particularly in the morning), the smell comes up the stairs and all over the house, and is most objectionable. I have enclosed the landing from the basement, and tried to shut it in, but immediately the door is opened it escapes all over the house. I have tried some other means, but unsuccessfully. It is not a question of cost. If any one could inform me how it could be effectually altered, so that there should not be any doubt of its success, I should be extremely obliged. It has been suggested to me that a hood over the fireplace, projecting into the kitchen, with a pipe from the top into the chimney, might be successful. Have any of your readers tried anything like this, and if so, would they kindly give me their experience of it? KITCHENER.

CHURCH BUILDING NEWS.

Oddington.—The parish church here has just been reopened, after restoration. On Saturday, the 1st inst., the church was visited by the Oxford Architectural and Historical Society, who chose it as the first of their term's excursions. Mr. Bruton, the architect, from whose designs the church has been restored, met the members and delivered a lecture, from which the following particulars have been abstracted. "This is a most interesting example of a very simple church, built very early in the fourteenth century, and consists of nave, chancel, and north aisle, to which has now been added a small vestry on the north side. The only internal evidence of a north aisle having ever existed was to be seen on the north side of the chancel arch, where there was a semi-arch of stone springing from the north wall up to, and apparently intended to support, the plaster chancel arch. The external walls undoubtedly led to the suggestion that the arcade of the north aisle had been removed. Admitting this hypothesis, the symmetry of the church becomes apparent. Investigation proved that the north wall had been raised, and a common queen-post roof made to span the entire width. This wall being of less substance than that on the south, had in several places given way, and modern buttresses had been built against it to withstand the thrust. The roof had become very unsound and the ceiling dangerous, and many of the timbers decayed. Above the flat ceiling, and under the roof, was discovered the original water tabling, now to be seen on the tower above the restored roof. The lines of this water tabling conclusively proved the original existence of a north aisle, the centre line of the original roof being central with the tower. When the roof was removed there appeared above the ceiling line at the east end remains of an earlier chancel arch, but further investigation proved that this was not original. In removing the upper part of the north wall, to bring it to the level necessary for the roof, it was hoped that further remains would be discovered. None of the stones, however, which were found could be said to belong to it; but several of an ornamental character clearly belonged to a twelfth-century arch, which was probably removed when the before-mentioned one was built. This, of course, was done to get a wider opening between the nave and chancel. Mature consideration convinced one that this arch and the shafts were part of the north arcade, and, in fact, the before-mentioned shaft and respond have been replaced at the west end of the restored arcade, where, it is believed, they originally belonged. The stones of the arch and of the shaft have been re-used without any disturbance of the original surface, and several of the stones bear upon their face painted scroll work belonging to the period. There is similar work to be seen at Charlton-on-Otmoor. The bases and capitals were too much mutilated to be re-used, the mouldings having been cut away to receive the framing of the plaster sham arch. These mouldings have been carefully reproduced in all the capitals and bases of the arcade; the new arches are also facsimiles of the discovered one. The windows of the south side of the north aisle had been much mutilated, with the exception of the western window of the north aisle, which is original; the mullions and heads had been removed, and the jambs cut away, and the space covered with a single arch. The new roof has tie-beams, with moulded king-posts, with framed rafters belonging to the period of Edward II., which has been adopted, although belonging to a slightly later period than the walls; because the walls are slightly out of upright, and this kind of roof has no thrust. The original pulpit, upon which the date 1617 can be seen, has been re-used, and new oak benches, facsimiles of some fifteenth-century originals, replace high close pews of the last century. The roof of the chancel is of a simliar character to that on the nave, replacing a bracketted plastered ceiling, elliptical in section." The work has been executed by Messrs. Silver, Sons, & Filewood, builders, Maidenhead, at a cost of about 1,200*l.*, from the designs and under the direction of Mr. Edward G. Bruton, architect, of Oxford, and surveyor for the diocese.

London.—After having been closed for two months for internal decorations and repairs the ancient church of St. Nicholas Cole Abbey, in Queen Victoria-street and Knightrider-street, has just been re-opened. The original church, erected in 1377, was one of those destroyed by the Great Fire in 1666, and the present church was erected in 1677 from the designs of Sir Christopher Wren. Some twelve years ago the interior underwent a restoration which consisted, amongst other things, of cutting down the high pews and repaving the flooring with tiles of a Mediæval pattern. Amongst the work which has now just been carried out is the decoration of the flat plaster ceiling, which is divided into fifteen panels; and also the painting and decoration of the walls. The decorations of the ceiling have been carried out in turquoise blue, cream colour, and light reds, interspersed with gilding. The prevailing tones of the colouring on the walls are dull reds and dead gold. The ceiling colours have been partly brought down into the cornice and toned off into the dull reds of the walls and pilasters. By this means the extreme flatness of the ceiling has been overcome. The windows on the north side and at the east end, from which only the church is lighted, have been filled in with stained glass, the upper portion of the windows on the north side having canopy work, with arches, wreaths, and pediments, together with heraldic shields. The three east windows are filled entirely with stained glass, the central window representing our Lord in glory, that on the north side St. Mary and St. Peter, and the one on the south side St. Nicholas and St. Benedict. The old oak reredos, with its fine carvings, either from the hand of Grinling Gibbons or one of his pupils, has been slightly touched here and there with gold. The Tables of the Law have been placed on either side within the chancel rails, whilst the central portion has a square panel, which is intended to contain the Adoration of the Lamb, in mosaic. Above, on each side of the windows, the wall is marked out in panels, each panel containing representations of scriptural figures and characters. Clergy and choir stalls have also been constructed on each side of the chancel. The decorative works have been carried out from the drawings of the architect, Mr. George H. Birch, the designer of the Old London Street at the Health Exhibition, the general decorative contractors being Messrs. Campbell, Smith, & Campbell, of Newman-street, Oxford-street, whilst the internal alterations have been effected by Mr. Spencer, of Knightrider-street. The cost of the decorations of the east windows and the reredos has been defrayed by the new rector (the Rev. H. C. Shuttleworth) and his friends.

Goathurst.—The parish church of Goathurst, near Bridgwater, has lately undergone an internal as well as external restoration. Dedicated to St. Edward, it consists of nave, western tower, chancel, south porch, south transept, and north chancel aisle, and belongs to the Decorated period of architecture. Considerable alterations were made in the fifteenth century, when the walls were raised, larger windows inserted, and the existing roof placed on the nave. In the course of the execution of the present restoration all the plaster was removed both from the internal and external faces of the walls, and many interesting features were brought to light. The original north doorway, with a portion of the wood and the iron hinges of the door, were brought into view; also the doorways at the foot and at the head of the staircase to the rood-loft. The whole of the walls have now been pointed externally, while internally they have been re-plastered and finished with stucco of the colour of Ham stone, and all the features of the ancient building preserved. The parapet of the tower and staircase, which was in an unsafe condition, has been entirely rebuilt with rag stone and Ham stone dressings, and the roof covered with new lead. The windows of the belfry have been fitted with pierced Ham stone panels. The dressed stonework generally has been repaired and in some cases entirely renewed. The nave has been re-seated, the old oak of the former seats with carved ends having been worked in again. The Tynte monuments in the nave have been taken down and re-arranged, so as not to interfere with the architectural features of the interior. One of these, that to Sir Charles Tynte, is by Nollekens. All the windows in the chancel have been filled with painted glass by Messrs. Lavers, Barraud, & Westlake, of Endell-street, Bloomsbury. The hot-water pipes for warming have been fixed by Messrs. Culverwell, of Bridgwater. The work has been carried out by Mr. Henry W. Pollard, the general contractor; and Mr. Chas. Green, stonemason, both of Bridgwater, from the plans and under the direction of Mr. Houghton Spencer, of Taunton, architect.

The Student's Column.

ON THE CONSTRUCTION OF ROOFS.

IV.

QUEEN-POST ROOFS are employed in preference to the king-post roofs, described in the last article, where the span is considerable. In this form of roof the heads of the principals are framed into two vertical pieces called *queen-posts*, as Q (fig. 10)

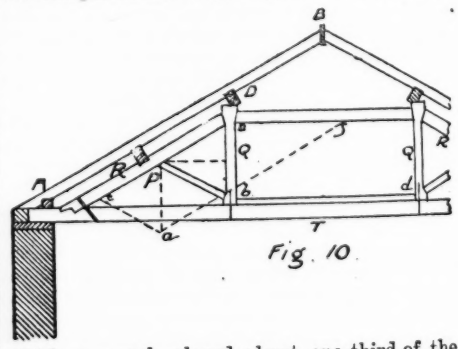


Fig. 10

which are each placed about one-third of the span from the feet of the principals. The reaction of the principals is counteracted by means of a horizontal *straining-beam*, S, framed into the heads of the *queens*, which, by this means, are enabled to support the weight of the tie-beam. In roofs of from 30 ft. to 40 ft. span two purlins will suffice on each side of the roof, one being supported on the top of the queen, as D, and the other, P, half way between D and A, as in the king-post roof. The strut, P *b*, supports the middle of the principal, and its horizontal thrust on the foot of the *queen* is counterbalanced by a corresponding thrust from the other strut at *d*, which is conveyed along a *straining-sill*, *b d*, laid on the top of the tie-beam, and bolted to it, without which there would be danger of displacing or overstraining the joint of the queen-posts with the tie-beam. Where the span does not exceed 40 ft., the heads of the rafters at B do not require any support beyond that which they afford each other by being spiked to the *ridge-piece*, and the purlin, D, has to support half the load on the rafters, A B, or one-fourth of W, which we

put for the whole weight on each truss. The purlin, P, will sustain one-third of the load on the rafters, or one-sixth of W; and one-twelfth of W rests on the *pole-plate*, A.

The strains on the parts of a queen-post roof are similar in character to those of a king-post roof, but different in magnitude. Each queen has to sustain one-third of the load on the tie-beam, while the vertical strain arising from the thrust of the strut is only half that which a king-post sustains. If we represent the vertical load at P by the line P*a*, and draw *a b* and *a c* parallel to A B and P *b* respectively, P *b* will be the thrust down the strut, and the horizontal line P Q will be the thrust along the straining-sill *b d*, while Q *b* will represent the vertical strain down the queen. The purlin D presses on the head of the queen, and produces a thrust down the principal, and a compression along the straining-beam S. Let the length *b e* represent the vertical load at D, and the part of the weight of tie-beam which the queen sustains: draw S *b* parallel to A B, then S *e* will represent the compression along the straining-beam, and *e c* will represent the thrust down the principal, R, arising from this force; in addition to which R has to sustain the thrust, P *c*, arising from the load at P.

For spans exceeding 40 ft., it is necessary to sustain the ridge, B, by means of a king-post truss, of which the straining-beam, S, will form the tie-beam, which is thereby prevented from sagging; or struts from *b* and *d* to the centre of S can be introduced for the latter purpose, and the straining-sill, *b d*, omitted.

Cast-iron heads and shoes, and wrought-iron rods, can be substituted for the timber queen-posts, as before described for king-post roofs.

All framed roofs, with tie-beams, are made upon the principle of either the king or queen truss, or a combination of the two, which may be employed for roofs up to a span of 90 ft.

The scantlings of the timbers for a queen-post roof for a span of 40 ft. should be at least as follows:—Tie-beam 9 in. by 5 in., principals 6 in. by 5 in., straining-beam 8 in. by 5 in., struts 5 in. by 3 in., queens 5 in. by 3 in. at the smallest part, purlins 8 in. by 5 in. For 50 ft. span, tie-beam 11 in. by 6 in., principals 7 in. by 6 in., straining-beam 10 in. by 6 in., struts 6 in. by 5 in., queens 6 in. by 5 in., purlins 9 in. by 6 in. if there are only two on each side, or 8 in. by 5 in. if there are three to a side.

Hammer-beam roofs are frequently found over buildings erected in the fifteenth century, and the form of framing is a modification of the *collar-roof* described in the last article; only, instead of each pair of rafters being framed, trusses are formed of heavier timber, and the common rafters supported upon them by means of purlins.

The principle of their construction is shown by fig. 11, in which R R are the principal

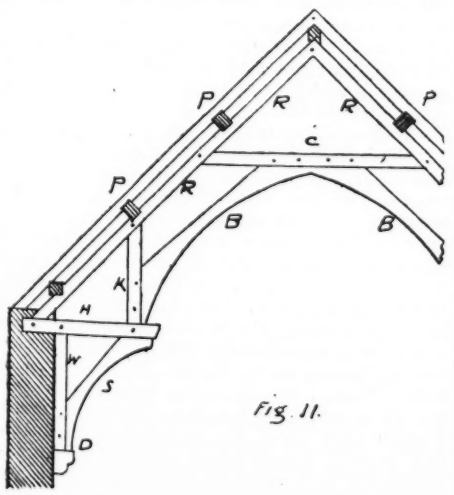


Fig. 11.

rafters which are framed into a horizontal beam, H, called the *hammer-beam*, which projects some distance from the wall, in some cases as much as one-fourth of the span. The hammer-beam is supported by the *waling-piece*, W, fixed upright against the wall and resting on a stone corbel, D; also by a strut, S, fixed between the corbel and the outer end of the hammer-beam. From the outer end of the hammer-beam rises the vertical strut, K, which is framed into the principal R. A collar-beam, C, is placed across from one principal to the other, and a pair of braces, B B, connect the ends of the hammer-beams with the centre of the collar, thereby tying the two hammer-beams together. The rafters are carried by the purlins, P, which are often deeply moulded. If there was no shrinkage of the wood, such a piece of framing ought to be perfectly rigid, and produce no thrust on the walls, as it consists of a number of triangles whose forms cannot be altered without a lengthening or shortening of the pieces which form the sides of the triangles. Practically, however, there is a considerable thrust on the walls which require to be made much stronger than for a tie-beam roof, or else to have buttresses built against them opposite each principal.

In this piece of framing, the hammer-beams are subjected to tensile strain in the direction of their length, and a compression where the struts abut against it; the waling-piece, W, is compressed, and also the struts, S and K; the collar, C, and the braces, B, are subjected to a tensile strain; the principals, R, have to bear a compressive strain down their length, and also a cross strain.

The timbers in these old roofs were generally of large scantling, as compared with those employed in modern tie-beam roofs of the same span; thus we find that in the roof of a small village church in Suffolk, where the span is only 18 ft., the principals, hammer-beams, and collars, are 10 in. by 8 in., and the common rafters, 6 in. by 3 in.; while in another of 20 ft. span, the principals and hammer-beams are 13 in. by 10 in. In modern roofs, constructed after this fashion, it has generally been found necessary to connect the outer ends of the hammer-beams by means of iron tie-rods, so as really to convert them into tie-beam roofs.

The roof of Westminster Hall, which has a span of 68 ft., is the finest specimen of hammer-beam roof now in existence, and is constructed on the same principle as shown by fig. 11, with the addition of a curved rib, springing from the corbel, D, and passing between the strut, S, and the waling, W, between the strut, K, and the principal, R, and meeting the braces, B, at the centre of the collar; all the triangular spaces between the timbers are filled up with open arcading of timber, which adds greatly to the rigidity of the framework.

The strains on the several pieces of a hammer-beam truss can be ascertained by the "resolution of forces," as shown in king and queen post roofs, and the scantlings of the timbers should be rather more than was found necessary for tie-beam roofs.

Another method of building roofs without a horizontal tie-beam, so as to carry the room up into the roof, is by the use of semi-circular ribs, formed of two or more thicknesses of short pieces of plank bolted together so as to break joint. The ends of these ribs rest upon a plate of timber or shoes of iron, and the weight of the roof covering is supported by means of

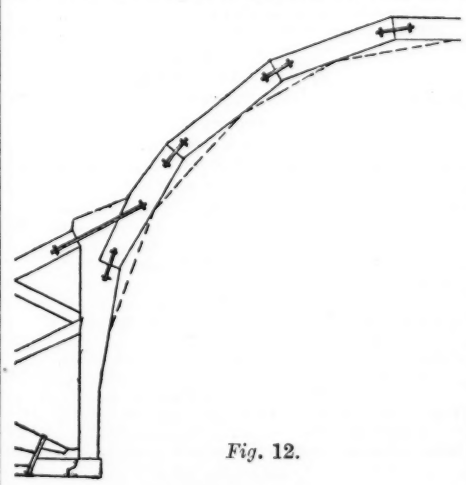


Fig. 12.

purlins placed horizontally from rib to rib. The roof of the central hall of the Pantheon in Oxford-street is constructed in this manner, and a portion of it is shown by fig. 12 (from Tredgold's "Carpentry"). The span of this roof is 38 ft., and the ribs are placed 11 ft. 6 in. apart, each rib consisting of a central plank of teak, 5 in. thick, with a 2½ plank of fir on each side, as shown by the dotted line. The depth of the ribs is 16 in., and they rest at the foot in cast-iron shoes, which also receive the tie-beam of a half-truss forming the roof over the side galleries, which serve as a buttress to prevent the feet of the ribs from spreading laterally.

A large semi-circular roof of wood was erected over the Great Northern Railway station in London, having a span of 105 ft. The ribs were formed of 1½-in. deal planks, laid with their broad side horizontal, and bent to the required curve, the planks being prevented from straightening out by crossing the grain of the wood. The wood ribs were firmly fixed in a cast-iron spandrel built into the wall, and rising to a height of 40 ft. Purlins were laid across from rib to rib, and the roof covering of slate and glass fixed thereto. Details of this roof will be found in the *Builder*, 1852.

The scantling of the ribs for roofs constructed as shown by fig. 12, when the purlins rest immediately on the ribs, should be as follows:—For a span of 30 ft., the breadth should be 10 in. and the depth 17½ in.; for 40 ft., breadth 12 in. and depth 18 in.; for 50 ft., breadth 14 in., depth 19 in.; for 60 ft. span, breadth 15 in., and depth 20 in. Fir is supposed to be the material used in these cases, and the ribs placed 10 ft. apart. These scantlings are obtained from the following rule, which may be considered sufficiently correct for practical purposes. Divide 200 times the radius of the rib (in feet) taken at the middle of the depth, by the breadth in inches, the square root of the quotient will be the depth in inches. The horizontal thrust of the rib at the springing, when the load on the roof is 50 lb. on every square foot, may be approximately found by multiplying the radius in feet by 375, and the result will be the thrust in pounds.

In order to prevent the ends of tie-beams from rotting through contact with the damp of a wall, cast-iron *shoes* or *plates* are laid on the walls for the timbers to rest in, and secured with bolts passed through the iron and wood. Wrought-iron straps are valuable to secure joints wherever there is a tensile strain on the beams, as at the junction of a collar-beam with the principals where horizontal straps should be used and bolted to the collar, the back of the principals being notched out to give the straps a firm hold.

LEAN-TO ROOFS.

SIR,—In the "Student's Column" in the *Builder* for Nov. 8, in treating of lean-to roofs, the subject of inclined beams is dealt with, but not, I think, with sufficient detail. If the writer would oblige by replying to the following questions I think he would confer a benefit upon many students:—

1. What is the effect of the inclined beam and its load upon the higher support?

2. Is there not a horizontal thrust acting there equal and opposite to that on the lower support, tending, in fact, to separate the supports by thrusting them apart?

3. What proportion of entire vertical load is carried upon each of the supports?

In the article referred to, it is stated that the horizontal thrust of a span roof of a given angle is double that of a lean-to roof of the same angle. If a lean-to roof *simply abutted against* a wall at the top the outward thrust would be equal to that of a span roof, because such abutment would be equivalent to that of an opposite rafter. I take it, therefore, that if the statement be correct that the lean-to roof has a thrust of only one-half that of the span roof; the fact is only true when the lean-to has support from *beneath* at its higher end.

Can such theories be proved to ocular demonstration, say, by means of cords and weights passing over pulleys? INVESTIGATOR.

*** The effect of the inclined rafter of a shed-roof, as shown on figs. 2 and 3, upon the higher support, is simply that of a vertical pressure, and there is no horizontal thrust against the upper wall, the rafter *resting* upon the plate and not leaning against it. If, however, the lower support should yield at all, the rafter will tend to *pull* the upper wall over. The vertical pressures on each wall will be equal, which can be demonstrated experimentally by suspending each end of a beam by a cord passing over a pulley, and having a weight equal to half that of the beam hung therefrom; the beam will be found to balance in any position whether level or inclined at any angle.

In the article referred to it is *not* "stated that the horizontal thrust of a span-roof of a given angle is double that of a lean-to roof of the same angle." We have purposely avoided using all mathematical symbols in the articles for the "Student's Column," but to any one who is acquainted with trigonometry the following investigations will be easily understood. If θ is the angle of pitch, then, by the resolution of forces, the thrust down the rafter of the shed-roof (fig. 2) is bc = W. sin θ, and

the horizontal thrust is $bd = bc \times \cos\theta = W. \sin\theta \cos\theta = \frac{1}{2} W. \sin 2\theta$; which is greatest when $\theta = 45°$, the horizontal thrust being $\frac{1}{2}W$ in that case; it is least when θ is 0° or 90°, for in either case there is no thrust.

In the span-roof (fig. 5) the horizontal thrust is $Bb = \frac{1}{2} W. \cos\theta$, which diminishes as the angle of pitch increases, becoming nothing when θ is 90°, but getting greater and greater as θ diminishes. When $\theta = 45°$ the horizontal thrust will be $\frac{1}{2}$ W in both the shed and span roofs.

If the rafter of the shed-roof merely leans against the upper wall, and does not rest upon it in the manner described, then the thrust on the lower wall will, of course, be the same as in the span-roof having the same pitch and length of rafter, and there will also be an equal thrust against the higher wall. In practice, however, shed-roofs are not constructed in this manner.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

790, Improvements in Water-waste Preventers. G. Homewood.

In order to facilitate the rapid filling and discharge of the cistern a new description of valve and syphon is here used, the two being connected, and allowing, upon raising the valve from its seat, an immediate flow of water, which exhausts the air in the syphon. This exhaust causes a continuous flow through the syphon, until the cistern is emptied. A provision is made for admitting air by means of a small hole, and also by a notch in the short leg of the syphon, by the action of which the water is cut off, and prevented from flowing through the syphon till the valve connected with the said syphon is again raised.

12,118, Improved Flooring Clamp. R. & R. W. Booth.

The object here is cheapness in construction and effectiveness in action. The flooring clamp has a vertical worm actuated by a lever handle, which together act on a rack or toothed bar. A washer of a peculiarly serrated pattern is used so as to prevent the return or springing of the clamp.

9,450, Improved System of Ventilation. M. Tobin.

Several modifications of the well-known system of ventilation introduced by Mr. Tobin are here protected. They consist of arrangements for allowing fresh air to be admitted without draught by window sashes, doors, or orifices in the walls of the apartment. In the form best known where ventilation is arranged by tubes in the room if the current of air is strong outside, it would, being admitted vertically, strike, and be deflected from a low ceiling, and produce a downward draught. In the present improvement air is admitted by circular orifices arranged in groups or lines. Immediately in front of the group of lines or holes a vertical baffle is arranged, against which the currents of air strike, and are deflected in a series of vertical eddies. Fresh air is thus imperceptibly introduced throughout the apartment without possibility of draught, direct or deflected outlets for the foul air being provided.

APPLICATIONS FOR LETTERS PATENT.

Nov. 7.—14,697, G. Messenger and S. T. Messenger, Ventilators and Chimney Cowls.—14,711, A. Mackie, Machinery for Grinding and Shaping Bricks.—14,712, J. M. Morrath, Sanitary Constructions of Fire and Earthquake Proof Houses.—14,715, W. Nicholls, Painting or Cleaning Window-sashes without risk.—14,721, H. E. Devaux, Manufacture of Cement.

Nov. 8.—14,755, J. Halley, Improved System of Laying Wood Pavements.—14,778, H. C. Webb, Improvements in Door Knobs.

Nov. 10.—14,787, W. Lindsay, Improvements in Roller Blinds.—14,797, C. Spratt and A. Churchman, Universal Cycle Clamp.—14,805, A. De Bourbon and C. De Bourbon, Embossed Wood Grained Paper, to imitate carved wood and stone.—14,816, F. R. Strickland, Opening and Closing of Sliding Sashes and Doors.

Nov. 11.—14,830, J. Westley, Ventilating Heating Gas Stove.—14,839, J. Shaw, Preventing Smoke in Open Firegrates.—14,861, W. G. Stuart, Water Meters.—14,868, A. Spencer, Holding Sliding Windows in closed or open positions.—14,877, S. W. Worssam, Horizontal Sawing Machines.

Nov. 12.—14,882, S. Moorhouse, Heating Buildings.—14 888, F. Willcox, Ventilators.—14,892, J. Winfield and H. G. Evered, Combined Cooking and Ornamental Over-mantel Register. — 14,896, T. Walter, Flushing Apparatus for Water-closets, &c.—14,904, J. Adams, Balancing Window-sashes.—14,906, H. Sykes, Improvements in Planes.—14,909, P. Bowden, Manufacture of Bricks and Tiles.—14,917, R. Stoffert, Improvements in Girders.—14,918, R. Lawrence, Apparatus for Polishing Granite.—14,919, T. C. March, Protecting Screens for Horticultural Buildings, &c.

Nov. 13.—14,943, R. T. Taylor, Washing Sand or other Materials.—14,957, W. C. Morton, Improvements in Window-blinds.—14,984, W. Edwards, Improvements in Bolts.

PROVISIONAL SPECIFICATIONS ACCEPTED.

132, J. S. Sweet, Ventilating Houses.—13,017, F. Willcox, Improvements in Ventilators.—13,095, W. Brock, Construction of Sanitary Houses and Bungalows.—13,350, J. C. Webb, Kilns and Stoves.—13,412, F. West, an Adjustable Crane, specially applicable to Concrete Building.—13.497, S. Chinn, Exhaust Ventilators.—13.528, W. Paulson, Ventilating Rooms and Preventing Smoke.—13,719, T. W. Helliwell, Securing and Fixing to Roofs, Flats, or Sides of Buildings sheets of Zinc, Copper, Corrugated Metal, or other material.—13,924, A. M. Clark, Excavators.—13,990, T. Thorley, Chimney-breast Ventilators.—14,087, J. Farthing and J. Lorrimer, Artificial Asphalte.—14,141, R. Haywards, Fixing Door-handles to their Spindles.—14,308, C. Leech, T. Neal, O. Lilly, and H. J. Staples, Manufacture of Indian Red, Venetian Red, and other Oxide of Iron Pigments.—386, J. B. Shaw, Artificial Marbles, Granites, &c.—7,089, W. Moyes, sen., G. Moyes, and W. Moyes, jun., Urinals and Water-closets.—12,898, W. L. Wise, Grinding or Shaping Cutting Tools.—13,390, W. Crowder, Automatic Bolt or Fastener.—13,646, F. Howcroft, Automatic Sash-lock.—13,761, M. Dennstedt, Manufacture and Preservation of Articles of Gypsum, Stucco, or the like.—13,909, J. Caink, Sewer Ventilation.—14,094, W. Perry, Stop for Mortising Machine.—14,120, J. Walker, Roses and Barrels for Mace's Door Furniture.—14,567, G. Connell, Dormer Windows.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

2,585, D. Wande, Door Knockers and Bells.—132, J. Sweet, Ventilating Houses.—386, J. B. Shaw and W. S. Shaw, Artificial Marbles, Granites, &c.—402, E. Norcombe, Sash Fasteners.—475, H. Knowles, Construction of Kilns.—494, T. Harrison, Joint for Sanitary or other Pipes.—703, J. McCallum, Water-closets, &c.—727, J. Kay, Manufacture of White Lead.—1,224, G. Bratt, Combined Lock and Lifting Latch for Doors.—1,374, E. Howard, Water-waste Preventer for Water-closets, &c.—1,512, F. Bosshardt, Tile-making Machinery.—1,514, W. Wade, Self-adjusting Sash Fastener. — 1,526, C. Kite, Automatic Exhaust Ventilator.—1,597, W. Duncan, Transportable Buildings. — 1,636, H. Hart, Improved Method of Laying Bricks.—1,699, P. Laurence, Parallel Screw or Bench Vice.—1,795, H. Phillips, Chimney Tops and Ventilating Cowl.—1,903, F. Smith, Tall-boys for Preventing Down-draughts.—1,986, A. Thomson, Chimney Cowls.—2,320, E. Brewer, Pipe Joints.—2,499, W. Edwards, Self-closing Doors and Gates.—2,539, F. Wirth, Paints.—3,254, W. R. Lester, Astragals for Holding and Securing Glass for Roof Lights and Windows. — 5,211, J. Bothams, Construction of Walls, with Louvre Openings, and Bricks for the purpose.—9,903, A. Boult, Construction of Portable Buildings.—12,935, A. M. Clark, Auger Bits.

RECENT SALES OF PROPERTY.

NOVEMBER 13.

By RAYNBIRD & SONS.

Basingstoke—Five freehold cottages in Longcroft..	£560
Three freehold cottages in Bunnian-place.....	335
Wote-street—freehold house and workshop.....	800
Goat-lane—Two freehold cottages	335
Bedford-place—Freehold cottage	165
Thirteen freehold cottages in Flaxfield	1,800
A plot of land near the above	155
Victoria-street—Four freehold cottages	435

NOVEMBER 14.

By FRANK LEWIS & Co.

Peckham—63, Arthur-street, freehold	320

NOVEMBER 17.

By TOPLIS & HARDING.

Kennington-lane—No. 202, freehold	1,200

By OETZMANN & Co.

Green-lanes—12, Florence-villas, 75 years, ground-rent 8*l*.....	250

By ROBINSON & FISHER.

The reversion to a sum of 4,000*l*., invested in Railway Stocks, life aged 61 years	1,950

By W. J. NEWELL.

Bermondsey—300 & 302, Roll's-road, 60 years, ground-rent 10*l*.	515
Rotherhithe—35 & 37, Barkworth-road, 93 years, ground-rent 10*l*.	545

By DOWSETT & WOODS.

Tottenham—5 & 7, Catharine-road, 85 years, ground-rent 13*l*.	300
Kensington-square—No. 18, freehold.....	4,000

NOVEMBER 18.

By E. P. NEWMAN.

Isleworth—The residence, Park View, and fruit garden, 4a. 0r. 10p., copyhold	2,570
Mogden House and fruit gardens, 6a. 2r. 18p., freehold	3,000

By — HAXELL.

Tottenham-court-road—Nos. 30 & 31, term 13 years, ground-rent 80*l*.	1,350

By ROGERS, CHAPMAN, & THOMAS.

Belgravia—33, Eaton-place, with stabling, 27 years, ground-rent 40*l*.	5,280

By FULLER & FULLER.

Oxford-street—No. 94, a profit-rental of 220*l*. a year, term 16 years	1,980
Clerkenwell — 9, Myddleton-square, 28 years, ground-rent 6*l*. 11s. 3d.	470
Hampstead—Ground-rent of 5*l*. 5s., reversion in 31 years	205

NOVEMBER 19.

By MESSRS. ELGOOD.

Portman Estate—51 & 53, York-street, 23 years, ground-rent 21*l*.	£1,180
Portland Estate—114, Great Titchfield-street, 12 years, ground-rent 26*l*.	535

By HARMAN & MATTHEWS.

Stoke Newington—2 to 10 even, and 11, Kenilworth-terrace, 91 years, ground-rent 45*l*.....	2,465
Holloway—70 & 78, Seven Sisters-road, 21 years, ground-rent 14*l*.	1,110

NOVEMBER 20.

By FURBER, PRICE, & FURBER.

Palmer's-green—Nos. 13 & 14, Palmer's-green Villas, freehold.....	1,120
16 & 17, Palmer's-green Villas, freehold	1,200
The life interest in properties valued at 2,700*l*., and a policy for 500*l*., life aged 24 years, reversionary as to part	500

MEETINGS.

MONDAY, NOVEMBER 24.

Surveyors' Institution. — Mr. John Shaw on "Farm Tenancy Agreements and the Agricultural Holdings Act." 8 p.m.

Inventors' Institute.—8 p.m.

TUESDAY, NOVEMBER 25.

Institution of Civil Engineers. — Continued discussion on Mr. Jamieson's paper on "Electric Lighting for Steamships." 8 p.m.

St. Paul's Ecclesiological Society.—Mr. T. F. Bumpus on "London Churches, Ancient and Modern." 7.30 p.m.

Anthropological Institute.—Four papers to be read. 8 p.m.

WEDNESDAY, NOVEMBER 26.

Society of Arts.—Mr. Ernest Hart on "The International Health Exhibition." 8 p.m.

Royal Society of Literature.—Mr. C. H. E. Carmichael on "The Border-Land of the Middle Ages and of the Renaissance." 8 p.m.

THURSDAY, NOVEMBER 27.

Parkes Museum.—Dr. Alfred Carpenter on "Progress and Co-operation in Sanitary Work." 8 p.m.

Builders' Benevolent Institution.—Election of pensioners. Poll open from 2 to 4 p.m., at Willis's Rooms, St. James's.

Society of Antiquaries.—8.30 p.m.

Society of Arts.—Mr. W. Anderson on "The Conversion of Heat into Useful Work." (Howard Lectures.) I. 8 p.m.

Society of Telegraph-Engineers.—Adjourned discussion on "Alternating Currents." 8 p.m.

Miscellanea.

Re-Opening of the Brixton Public Hall. After undergoing an extensive enlargement, together with the construction of a new minor hall, a Masonic lodge-room, a club-room, and several other additional apartments, the Brixton Public Hall, in Acre-lane, was re-opened on Tuesday last. The hall was originally erected in 1880 for Mr. Chard, its present proprietor, and the extensions just completed, consequent upon the accommodation not being adequate to the public demands, consist of the lengthening of the large hall, and the erection of a gallery at the south end, by which the hall will now seat an audience of 1,000 persons, as compared with 600 before the enlargement. The platform for the orchestra has been reconstructed and enlarged, and a large organ is now in course of erection by Messrs. Gray & Davison. The floors of both halls are laid in pitch pine, specially prepared and polished for dancing purposes. Attention has been given to the ventilation of the halls and apartments, and provision is made for the inflow of fresh air by Tobin's tubes, the sun-burners in the ceiling assisting in the extraction of the vitiated air at night. The windows on each side of the hall are made to open at the top when necessary. The whole of the work has been designed and carried out under the immediate superintendence of Mr. Francis H. Fowler, architect. The contract was obtained in competition by Mr. William Downs, of Walworth, at a sum of about 6,000*l*. The fire mains and appliances are by Messrs. Merryweather & Son. Messrs. Strode & Co. have re-arranged the whole system of lighting. Messrs. Rosser & Russell have fitted the warming apparatus in the several apartments. The plastic ornamentation in both halls has been executed by Mr. J. M. Boekbinder, of Thornhill-road, Barnsbury Park, who has also been entrusted with the coloured decoration. The acoustic properties of the large hall are very satisfactory.

The New Police Court for West Ham.—The first stone of the West Ham Police Court, Stratford, E., was laid on the 12th inst. by Mr. G. Rivett, Chairman of the Local Board. Mr. Lewis Angell, F.R.I.B.A., is the architect, and Messrs. M. A. Palmer & Sons are the builders.

Norwich.—Mr. E. Preston Willins, architect, has in the press a book of fifty plates, illustrating and entitled "Quaint Old Norwich." Only 500 copies are to be issued, of which half the number is already subscribed for.

Capital Entertaining Labour.—One of those interesting instances of capital entertaining labour, that are not so numerous that they should be overlooked, occurred last week at No. 1, Bolton Gardens, South Kensington, the residence of Herbert Clifford Saunders, esq., Q.C. The learned gentleman having lately bought the house, has had considerable additions made to it. Upon the completion of the works his pleasure was, as a "house-warming," entertain at a dinner all those men who had to assisted in the works, whether as skilled hands or otherwise. And as a further compliment to them the Rev. Dr. Forrest, the Vicar of the district, besides several of Mr. Saunders's personal friends, were invited. The architect under whom the work has been carried out, Mr. Henry Godwin; Messrs. Toten & Sons, of South Kensington, the contractors; and Mr. Litchfield, of Bruton-street, were also present. Mr. Saunders, in a few graceful and well-chosen sentences, welcomed the men; expressed his pleasure at seeing them, and his high appreciation of the manner in which they one and all had conducted themselves during the prosecution of the works. Some excellent music, vocal and instrumental, was subsequently provided.

The Hospitals Association. — The programme of papers to be read at the general meetings of the Association, to be held during the winter, has been prepared. The following subjects, amongst others, will be discussed:—"On Hospital Ships," paper by Mr. P. Murray Braidwood, M.D.; "A Re-discussion of the Out-patients Question," paper by Mr. J. S. Bristowe, M.D., F.R.S.; "On House Ambulances in connexion with Hospitals," paper by Captain William Joynes, chairman of the Northern Hospital, Liverpool; "The Relation of the Provident Dispensary to the Hospital," paper by Mr. C. J. Radley. The opening meeting will be on the 6th of December, but it will take the form of a *soirée*, and will be held at the rooms of the Medical Society of London, No. 11, Chandos-street, Cavendish-square. We are asked to state that Mr. J. S. Wood, secretary of the Chelsea Hospital for Women, and hon. sec. of the Bolingbroke House Pay Hospital, has been elected a member of the Council of the Hospitals Association, and that he has also joined Mr. J. L. Clifford-Smith as hon. sec. of the Association.

Social Science Association.—A largely-attended meeting of the Council of the Association was held last week under the presidency of Mr. Hastings, M.P. The names of representatives of Departments on the Council for 1884-5 were reported, and a complete list of the Council for the ensuing year was laid on the table. The executive committee was also elected. An invitation from the Corporation of Portsmouth to hold the congress for 1885 in that borough was considered, and its acceptance by the committee of Council confirmed. The following among other resolutions relating to the successful termination of the Health Exhibition was unanimously carried:—"That in the opinion of the Council of this Association, the opportunity is a favourable one for establishing closer relations between the various organisations which at present exist for the diffusion of sanitary knowledge and the application of sanitary science."

Floorcloth Designs Competition.—Messrs. Bainbridge & Co., of Newcastle-on-Tyne, are offering four prizes of amounts ranging from 100*l.* to 10*l.*, for the best artistic designs for floorcloth, to be sent in on or before March 1st of next year; which certainly allows plenty of time for maturing designs.

Royal Asiatic Society.—At the meeting of this society on Monday last, Sir William Muir, K.C.S.I., president, in the chair, a paper was read "On Recent Archæological Researches on the Buddhist Remains near Sambhar, in Rajputana," by Surgeon-Major Hendley, M.R.A.S.

Buildings for Poor-law Administration. Messrs. A. & C. Harston have been appointed, by the Guardians of Bethnal Green, architects for proposed school building extension at Leytonstone and new infirmary at Bethnal-green.

Mossend.—A new Catholic church was opened at Mossend, near Glasgow, on Sunday last, by the Archbishop of Glasgow. The architects are Messrs. Pugin & Pugin, of Westminster. Mr. John Devlin, of Glasgow, was the contractor.

Zinc in Modern Buildings.—Those who are interested in the free use of zinc in modern buildings should inspect the now nearly completed Hôtel Métropole at Northumberland Avenue. Messrs. F. Braby & Co. (Limited), Euston-road, are carrying out an extensive contract in that metal, the exterior decoration of the two top stories of the immense pile of buildings, as well as the mansard roofs, being entirely in that material.

Antiquary's Library.—The second series of the "Antiquary's Library" is nearly ready for issue to subscribers. The volumes consist of the "Life of Harold," translated and edited by Mr. W. de Grey Birch; "Bones and Medals, their place in History and Art," edited by Mr. Stanley Lane Poole; and "Gleanings from the Natural History of the Ancients," by Mr. M. G. Watkins.

The Proposed Electric Railway beneath the Thames.—It is stated that the promoters of the Charing-cross and Waterloo Electric Railway, which was sanctioned by Parliament in 1882 for the purpose of constructing an electric railway from Waterloo Station, passing under the River Thames to Northumberland Avenue, have decided to abandon the authorised railway and to dissolve the company.

Her Majesty's Theatre.—A summons, returnable on the 24th inst. at Marlborough-street, has been taken out by the Metropolitan Board of Works, under 41 and 42 Vic. c. 32, against the owners of the above theatre for not executing the necessary works required by the Board to be done pursuant to their notice served on the 27th day of February, 1883.

COMPETITIONS, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
Plans for Erection of a Hospital	Newbury District Hospital Trustees...	.....	Not stated ...	ii.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Making up Roads	Wandsworth B. of Wks.	*Official*	Nov. 25th	ii.
Fire Appliances	St. Pancras Guardians	.....	Nov. 27th	xx.
Engine and Boiler Houses, &c.....	St. Helen's Corporatn	D. M. F. Gaskin, C.E.	Nov. 28th	ii.
Erection of Infants' School, &c.	St. Ives School Board...	E. W. Robb	Nov. 29th	ii.
Enlargement of Sub-Dist. Post-Office, Peckhm	Commissnrs. of Works	*Official*	do.	ii.
Compressed Asphalte Pavement	Liverpool Corporation	City Engineer	Dec. 1st	ii.
Sewerage Works.....	Holborn Board of Wks.	L. H. Isaacs	do.	ii.
Engineering Works	Chelsea Guardians	A. & C. Harston	Dec. 3rd	ii.
Erection of Police Station	Receiver, Met. Police...	*Official*	do.	ii.
Paving Works.....	St. George-in-the-East Vestry	.....	Dec. 4th	xx.
Kerbing, Channelling, and Brick Paving	Enfield Local Board ...	W. Kitteringham.....	do.	ii.
Stores	Great Northern Ry. Co.	.....	Dec. 6th	ii.
Stores	Crystal Palace Co.	.....	Dec. 8th	ii.
Completion of New Infirmary	Paddington Guardians	A. & C. Harston	Dec. 10th	ii.
Well-Sinking and Pumping	Croydon Town Council	Borough Engineer	Dec. 11th	ii.
Crushed Granite.....	Bishop Stortford L. B.	.....	do.	ii.
Construction of Concrete Pier at Newlyn	Newlyn Pier & Harbour Commissfoners	J. C. Inglis	Dec. 13th	ii.
Baths and Washouses	City of Newcstle-on-Tyne	Gibson & Allan.....	Dec. 15th	ii.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Building and Drainage Inspector.....	Croydon Town Council	42s. per week.....	Nov. 27th	xviii.
Architectural Draughtsman	Civil Service Com.	Not stated	Dec. 24th	xviii.

TENDERS.

For new roof, and other alterations to warehouse, Buck's-row, Whitechapel, for Messrs. S. Schneiders & Son. Mr. John Hudson, architect, 80, Leman-street:—

A. Eaton, Whitechapel	£971	0	0
T. Little, Whitechapel	924	0	0
B. Hosegood, Brixton	813	0	0
Coulsell Bros.,* Bethnal-green.....	654	0	0

* Accepted.

For the construction of pipe-sewers in Penton-place and Eagle-court, Clerkenwell. Mr. W. Iron, surveyor:—

Hirst	£1,250	0	0
Linzell	1,100	0	0
Neave & Son	1,029	0	0
A. Walker	917	0	0
Wilkinson	847	0	0
Pizzey	743	0	0
Mowlem & Co.	725	0	0
T. Adams.....	716	0	0
C. Killingback (accepted)	700	0	0

Accepted for additions and alterations to ten homesteads, at Ryther and Cawood, Yorkshire, on the estate of Mr. R. A. Morritt, of Rokeby-grove, Barnard Castle. Messrs. William Lewis & Son, architects and surveyors, Stonegate, York:—

Chas. Horner & Son, Appleton Roebuck.

[By measure and value.]

Accepted for new front and additions to the *Yorkshire Gazette* office, High Ousegate, York, for the North and East Yorkshire Conservative Newspaper and Printing Company, Limited. Messrs. William Lewis & Son, architects and surveyors, York:—

G. Simpson & Son, Heworth, York.

[By measure and value.]

For office fittings to Ingram House, Fenchurch-street, for Messrs. Appleton, Machin, & Co. Mr. Herbert D. Appleton, architect, 157, Wool Exchange:—

A. & J. Sutton	£1,684	0	0
Carter & Co.	1,231	0	0
Drew & Cadman*	1,150	0	0

[* Accepted at 1,125*l.*]

For alterations to windows, at Ingram House, Fenchurch-street, for Messrs. Appleton, Machin, & Co. Mr. Herbert D. Appleton, architect, 157, Wool Exchange, Coleman-street:—

Robinson (accepted)	£229	17	6

For the Accrington sewerage works. Contract No. 5, Mr. E. Knowles, borough engineer:—

Richard Lomax, Eccles	£4,638	0	0 !
James Parkinson, Blackburn	4,000	0	0
Frank Dawson, Bury	3,697	0	0
Robert Lomax, Eccles.....	3,543	17	8
W. Ramsbottom & Son, Accrington	3,240	0	0
Fawkes Bros., Southport	3,206	12	11
John Sharples, Accrington	2,946	5	11
J. Orrel & Sons, Darwen (accepted)	2,616	6	9 !

For the erection of new stables, provender stores, &c., for the Borough of King's Lynn, from plans by Mr. E. G. Mawbey, borough surveyor. Quantities by Mr. E. G. Mawbey:—

W. H. Brown.....	£1,291	12	3
Lofts & Son	1,229	7	4
Bennett Bros.	1,114	8	9
R. W. Fayers	1,110	18	7
Leach, jun.	1,106	13	7
Thring & Spragg	1,059	7	8
R. Foreman	1,049	0	0
R. Dye	1,045	16	1
P. H. Dawes.....	1,015	0	0
Bardell Bros. (accepted)	995	0	0

[Architect's estimate, £997.]

For the erection of warehouse, Clifton-mews, Wandsworth-road, for Mr. J. Broomfield. Mr. H. Wakeford, architect:—

Stephens	£520	0	0
Hunt	468	0	9
Curnick	425	0	0
Tinsley	390	0	0
Rice	381	0	0
Lathey	377	0	0
Bawden (accepted)	333	0	0

Accepted for the enlargement of the East Grinstead Dispensary. Mr. S. W. Haughton, architect:—

W. Pledge, East Grinstead	£117	1	0

Accepted for the erection of a villa residence at Tonbridge. Mr. S. W. Haughton, architect, East Grinstead:—

Geo. Punnett & Sons	£780	0	0

Accepted for alterations and additions to 22, The Chase, Clapham-common, for Mr. Arthur Colman. Mr. R. W. Price, architect:—

E. Triggs	£325	0	0

[No competition.]

For building new factory, stores, cellar, &c., at Bondstreet, Vauxhall, for Barrett's Screw Stopper Bottling Company, Limited. Mr. E. Rawlings, architect, 3, Victoria-street, Westminster. Quantities by Mr. Morris Evans, 7, John-street, Adelphi:—

P. Duplock, Wandsworth-road	£29,550	0	0
W. Whiteley, Westbourne-grove	27,140	0	0
D. McGregor, Acre Wharf, Belvedere-road	26,924	0	0
W. Scrivener & Co., Fitzroy-road, Regent's Park	26,787	0	0
T. L. Green, Eagle-street, Holborn	26,662	0	0
J. Allen & Sons, Palmerston-road, Kilburn	25,790	0	0
Fish, Prestige, & Co., Cambridge Wharf, Pimlico	25,740	0	0
W. & H. Castle, Redcross-street, Borough	25,419	0	0
J. Greenwood, Mansfield, Notts	25,328	0	0
J. T. Chappell, Lupus-street, Pimlico	25,236	0	0
R. & E. Evans, Lisford-street, Peckham	24,670	0	0
G. Stephenson, Belsize-avenue	23,777	0	0
F. Higgs, Loughborough Junction	23,350	0	0
Webb & Rosser, Beardon-road, Hammersmith	23,175	0	0
H. & E. Lea, Warwick-street, Regent-street	23,100	0	0
C. Dickinson, Loughborough Junction (accepted)	22,777	0	0

For police buildings, at Newport, for the Magistrates of the County of Monmouth. Mr. William Tanner, County Surveyor, architect. Quantities supplied by the architect:—

King, Gloucester	£4,995	0	0
Jones & Co., Gloucester	4,570	0	0
Hilton & Sons, Newport	4,354	0	0
Martin, Newport	4,260	0	0
Williams, Newport	4,250	0	0
Brind, Newport	4,232	0	0
Burgoyne, Blaenavon	4,200	0	0
Forse, Bristol	4,200	0	0
Church, Bristol	4,179	0	0
Wilkins, Newport	4,140	0	0
Blackburn, Newport	4,139	0	0
Davies, Cardiff	4,100	0	0
Prosser, Newport	4,070	0	0
Miles, Newport	3,993	0	0
Linton, Newport (accepted)	3,990	0	0

[Architect's estimate, £4,200.]

For alteration and additions to stable and coachhouse, 9, Seamore-place, Mayfair, for the Hon. A. De Tatton Egerton, M.P. Mr. C. Crosse, architect. Quantities by Mr. J. S. Matthews:—

R. Elwin, Mount-street	£1,300	0	0
W. Downs, Walworth	1,198	0	0
W. A. Rhodes, Marble Arch	1,180	0	0
J. & J. Greenwood, Bermondsey	1,136	0	0
J. Horne & Son, Blackfriars-road	1,121	0	0
Higgs & Hill, South Lambeth	1,098	0	6
F. Higgs, Brixton (accepted)	1,050	0	0

For additional story and alteration to workshops, Great Windmill-street, Golden-square, for Mr. J. Batson. Mr. D. C. Nicholls, architect. No quantities:—

Burridge, Crawford-street	£840	0	0
W. A. Rhodes, Marble Arch	715	0	0
H. & C. Lea	675	0	0
Love, Soho	595	0	0

For shop fittings and sanitary work, &c., 318, Oxford-street, for Mr. D. H. Evans. Mr. Owen Lewis, architect. No quantites:—

W. A. Rhodes, Marble Arch	£150	0	0
Street Bros., Camden-town	142	0	0
Salter, New-cut	127	10	0

For alterations at the Black Bull public-house, Lewisham, for Mr. G. Shaw. Mr. H. T. Bonner, architect:—

H. L. Holloway (accepted)	£975	0	0

For alterations and additions to 126, Whitecross-street, St. Luke's, for Mr. E. Orgill. Mr. C. R. Winter, architect:—

J. R. Hunt	£442	0	0
H. Dye	360	0	0
J. Webb	335	10	0
Steel Bros.	325	0	0

For alteration of shop, for Mr. Gilbert, saddler, Newmarket. Mr. John Flatman, architect, Newmarket:—

Kerridge & Shaw	£599	0	0
Simpson & Son	545	0	0
Saint & Son	530	0	0
Denson	450	0	0
Kent & Savage (accepted)	356	0	0

For completing the drill-hall, armoury, drill instructor's house and offices, Stalybridge, for the 4th C.R. Volunteers (Stalybridge Detachment). Messrs. Gregory Gill & Son, architects and surveyors. Quantities by the architects:—

Shaw, Curner, & Co., Stalybridge	£1,040	0	0
Joseph Grayson, Stalybridge	972	0	0
Napoleon Ives, Stalybridge	966	15	0
Garside, Barns, & Co.,* Stalybridge.	960	0	0
Hague France, Stalybridge	957	17	1½
Castle Hall Saw Mills Company, Stalybridge	955	0	0

* Accepted.

Heating Apparatus for the above (Hot-water low pressure).

John Swain, Hyde	£75	0	0
J. G. Wagstaff, Dukinfield (accepted)	70	0	0
R. Dawson & Co., Stalybridge	68	10	0

For rebuilding 35 and 37, Church-street, Greenwich, for Mr. W. B. Blackmur. Mr. R. W. Crawley, architect, 12, Trinity-square, Tower-hill. Quantities by Messrs. Hills & Fletcher, 149, Bow-road:—

Forrest	£1,994	0	0
Jerrard	1,990	0	0
Hall	1,875	0	0
Redman	1,825	0	0
A. & F. Smith	1,754	0	0
Hubble & Trott	1,749	0	0
H. L. Holloway (accepted)	1,747	0	0

For the erection of aërated water manufactory, at East Grinstead. Mr. S. W. Haughton, architect, East Grinstead:—

J. H. Godly, East Grinstead	£203	0	0
G. Quickenden, East Grinstead	180	0	0
W. Pledge, East Grinstead	175	10	0
Charlwood Bros., East Grinstead	165	0	0
J. Morris, Ashurst Wood	160	0	0
G. Beard, East Grinstead (accepted)	146	0	0

***Special Notice.*—Lists of tenders frequently reach us too late for insertion. They should be delivered at our office, 46, Catherine-street, W.C., not later than four p.m. on Thursdays.**

TO CORRESPONDENTS.

M. & B.—R. T. & Sons.—F. W. S. (it was a tower, not a spire).—Apex.—J. G. C. (below our mark).—C. D. (we fully expected your objection).—W. H. C.—C. F. H.—W. D. C.

All statements of facts lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read a public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news-items) which have been duplicated for other journals, are NOT DESIRED.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; all communications relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

PUBLISHER'S NOTICES.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE, AND GENERAL ADVERTISEMENTS,

Six lines (about fifty words) or under ..... 4s. 6d.
Each additional line (about ten words) ..... 0s. 6d.

Terms for Series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

SITUATIONS WANTED.

FOUR Lines (about THIRTY words) or under ..... 2s. 6d.
Each additional line (about ten words) ..... 0s. 6d.

PREPAYMENT IS ABSOLUTELY NECESSARY.

*** Stamps *must not* be sent, but all small sums should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-office, Covent-garden, W.C. to

DOUGLAS FOURDRINIER, Publisher,
Addressed to No. 46, Catherine-street, W.C.

Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

SPECIAL.—ALTERATIONS in STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same, must reach the Office before TEN o'clock on WEDNESDAY mornings.

PERSONS Advertising in "The Builder," may have *Replies addressed to the Office*, 46, Catherine-street, Covent-garden, W.C. *free of charge*. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied DIRECT from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum, PREPAID. To countries within the Postal Union, 26s. per annum. Remittances payable to DOUGLAS FOURDRINIER, Publisher No. 46, Catherine-street, W.C

Best Bath Stone.
WESTWOOD GROUND,
Box Ground, Combe Down,
Corsham Down,
And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts. [ADVT.

Dry Corsham Stone.
150,000 FEET CUBE.
PICTOR & SONS,
BOX, WILTS.
[ADVT.

Doulting Freestone.
THE CHELYNCH STONE. The stone from these quarries is known as the "Weather Beds," and is of a very crystalline nature, and undoubtedly one of the most durable stones in England.
THE BRAMBLEDITCH STONE. Is of the same crystalline nature as the Chelynch Stone, but finer in texture, and more suitable for fine moulded work.
HAM HILL STONE.
Greater facilities have been provided for working these quarries, and the stone can be supplied in large quantities at short notice.
Prices, and every information given, on application to CHARLES TRASK & SONS, Norton-sub-Hamdon, near Ilminster, Somerset.
London Agent — Mr. E. WILLIAMS, 16, Craven-street, Strand, W.C. [ADVT.

Doulting Free Stone HAM HILL STONE, BLUE LIAS LIME (Ground or Lump), For prices, &c., address S. & J. STAPLE, Quarry Owners, Stone and Lime Merchants, Stoke-under-Ham, Ilminster. [ADVT.

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 38, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. [ADVT.

Asphalte.
Seyssel, Patent Metallic Lava, and White Asphaltes.
M. STODART & CO.
Office:
No. 90 Cannon-street, E.C. [ADVT.

J. L. BACON & CO.,
MANUFACTURERS OF IMPROVED
STEAM AND HOT-WATER APPARATUS,
FOR WARMING AND VENTILATING
Private Houses, Churches, Schools, Hospitals, Manufactories, Greenhouses, &c.
OFFICES AND SHOW-ROOMS:—
No. 34, UPPER GLOUCESTER PLACE, DORSET SQUARE, LONDON, N.W.
And at DUBLIN, BELFAST, GLASGOW, and NEWCASTLE.
Illustrated Pamphlet on "Heating" post free.

The SILVER MEDAL of the HEALTH EXHIBITION
HAS BEEN AWARDED TO
CHAPPUIS' PATENTS FOR REFLECTING LIGHT.
DAYLIGHT REFLECTORS OF EVERY DESCRIPTION,
ALSO
ARTIFICIAL LIGHT REFLECTORS.
WHY BURN GAS?—CHAPPUIS' REFLECTORS DIFFUSE DAYLIGHT.—They are exclusively adopted by and fitted at Buckingham Palace, all H.M. Government Offices, Houses of Parliament, H.M. First Commissioner of Works, the Metropolitan Board of Works, British Museum, South Kensington Museum, Royal Institution, Guildhall Museum, on board H.M. Ships, also Railway Companies' Offices, Hospitals, Institutions, Banks, Insurance Offices, Manufactories, Private Houses and generally from Noblemen's Mansions to Artisans' Workshops. 30,000 in use in London alone. Patronised by leading Architects, Engineers, Contractors, &c., &c.
N.B.—For Prospectuses and Diagrams, address Stamped Envelope to
P. E. CHAPPUIS, Patentee and Manufacturer, 69, FLEET-STREET, LONDON.